Volume 75 Number 5
May 2007

Amateur Radio

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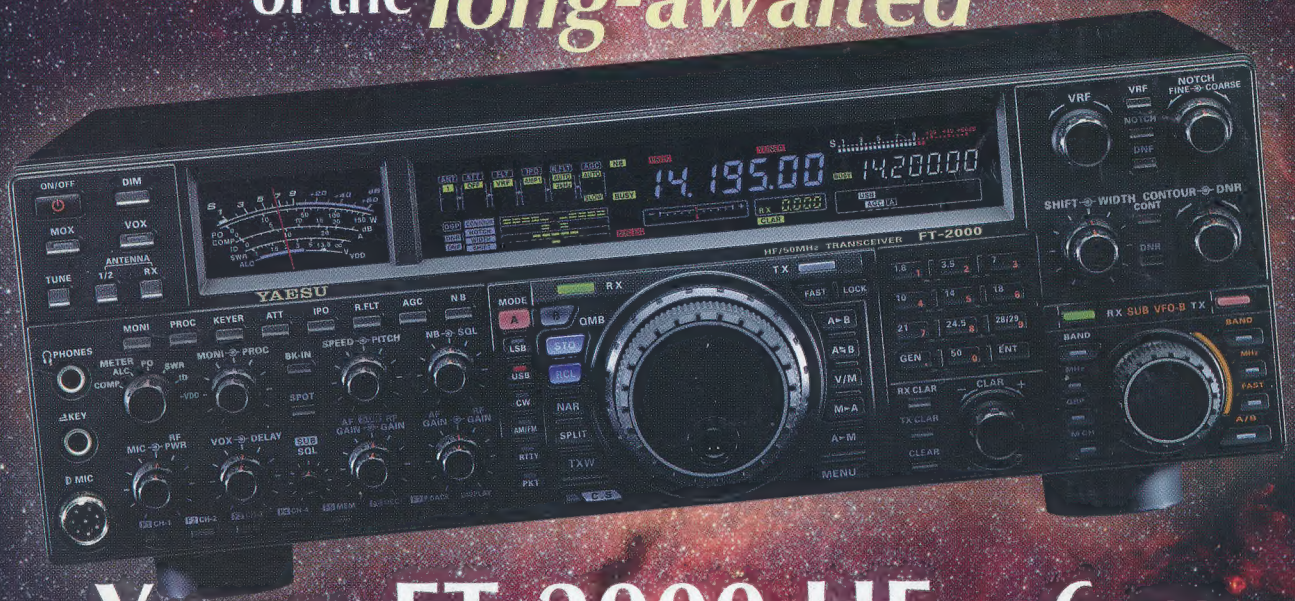

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Amateur Radio

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Our Cover this month

Reports indicate that the FT-2000 transceiver has been selling well since its release in december 2006. Read the review of this transciever by VK3OM and VK3BR, commencing on page 21. Images courtesy of Vertex Standard Australia. Background photo of the centre of the Milky Way courtesy NASA/JPL-Caltech

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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Representing
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Member of the
International Amateur Radio Union

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Editorial Comment

Peter Freeman VK3KAI

WIA – structure and response times

A few instances in recent weeks prompt me to write about the structure of the WIA and its operations.

Unlike our counterparts, the Radio Society of Great Britain (RSGB) in the UK and the American Radio Relay League (ARRL) in the US, the WIA is largely run by volunteers. We have a very small paid staff manning the Institute office, who are supported by several part-time volunteers. All the other work is done by volunteers.

In the case of the paid office staff members, there is a limit to the amount of work that can be completed in their paid working week. The office volunteers assist in the volume of work that can be completed in any given week. The entire office operation does very well, in my opinion, in addressing the demands placed upon it. There may be occasional delays or hiccups, but all concerned are striving to do their best with the systems that are currently in place. I am aware that the WIA Board is striving to improve all operational systems of the Institute, but such changes take planning and time to ensure smooth implementation.

Almost all other tasks conducted "by the WIA" are undertaken by volunteers, including the Board members. Some of these volunteers may be retired, but many are still engaged in full or part time paid employment. Regardless of their employment status, members cannot expect an unlimited amount of time to be made available to undertake WIA tasks, be they planning of the next "big thing", or answering a question received via email.

Yes, we often may be able to give a very rapid response to a query received via email. If the timing is right, a rapid response gives an answer quickly. Many now expect that the rapid response is the norm – is this acceptable? I do not think so.

I am aware, via a second hand but reliable source, that one member sent a query to our President on Good Friday. By Easter Monday, he had not received a reply, so sent an email complaining about the "slow response" to the WIA office. Of course, the office staff members were not at work on the Friday, Monday or Tuesday, as those days were Public Holidays for them.

I really think that members should think carefully about their expectations. I trust that most would agree with me that the above instance was far from reasonable. Even volunteers cannot be expected to be available to respond at all times, and will need to have some time away from this organisation.

Membership and benefits

We are hearing news of the preparations that many IARU societies are making for the next World Radio Conference. This WRC in November this year is particularly important because the agenda includes matters that directly impact on the amateur radio service. And there is always the risk of loss of spectrum. Many national amateur societies have very good relations with their national administration and are fortunate to be able to nominate a knowledgeable amateur as part of the formal government team at these conferences, if they bear the cost of that amateur's participation.

Australia is such a country.

In between these important international meetings, our national society – yes, the WIA – constantly interacts with the ACMA. Interactions include issues such as the balance of the amendments to the Amateur LCD, Australian participation in the CEPT visitor licence arrangements, two-letter callsigns, representing amateurs impacted by the deployment of BPL systems, amongst other issues. There is an ongoing requirement for a reasonable, technically sound voice to represent the interests of amateurs to the regulator and to government.

One could easily compare the WIA to a union, in many respects. Yes, I know that our current industrial relations regime tries to minimise the impact of unions, but many workers still rely on the power of collective bargaining in many aspects of their relationship between themselves and their employer. When a collective agreement can be reached,

continued on page 27

Michael Owen VK3KI

The WIA Learning Facilitator

Since October 2005, the WIA has managed the amateur qualification examinations based on the assessment of competency by assessors holding a nationally recognised qualification based on the Australian Qualifications Framework, with WIA Assessors formally trained by a Registered Training Organisation (RTO), and accredited and registered by the WIA. Prior to this time, amateur radio examinations for several years were managed by the WIA and conducted by Invigilators. Invigilators were people who were registered by the WIA on the recommendation of their clubs. Many of the former Invigilators are now Assessors, and we have continued to register new Invigilators at the request of the various clubs. Basically, their role today is assisting in the administration of assessments.

The basic document published by the WIA setting out the methods and requirements of its assessment system, the "Assessment Instructions", recognises the Invigilators as an essential part of the system: for example, it is required that an Assessor should only conduct assessments in the presence of another Assessor or an Invigilator.

We have wanted for some time to bring the Invigilators into the assessment system in a better way. We wanted them to have demonstrated knowledge of the assessment process. We wanted them to be fit and proper persons, as by now more states and territories are following Queensland in requiring some sort of clearance before working with children.

So now we are introducing the WIA Learning Facilitator to replace the Invigilator.

We have prepared a basic document setting out the methods and requirements for Learning Facilitators, the "WIA Learning Facilitator Instructions", and that is available on the WIA website.

We are using the term WIA Learning Facilitator because that is descriptive of what they are doing and, frankly, we couldn't think of anything better.

The Learning Facilitator will be a person qualified by our RTO, and subject to complying with state laws where they exist, for example a Blue Card in Queensland or a Working with Children Card in Victoria, or otherwise a national police check.

We are asking the existing active Invigilators to complete an application for qualification and registration as a Learning Facilitator. The application form is also downloadable from the WIA website.

We say that the WIA Learning Facilitator should fit certain criteria, such as:

- hold either an Australian Standard or Advanced Licence;
- have access to the Internet;
- use email and have a public email address;
- be nominated by a club or other group of radio amateurs, and
- be a member of the WIA.

Membership of the WIA is required because the WIA Learning Facilitator is representing the WIA and also to protect the individual, as the WIA's public liability insurance will provide cover in the terms of the policy.

The qualification should not be a barrier to existing Invigilators or others. To be qualified by the RTO, the potential Learning Facilitator must demonstrate knowledge of the WIA assessment system, as set out in the Assessment Instructions, as well as knowledge of the process for always seeking to improve quality.

How is that to happen? Let me quote from the WIA Learning Facilitator Instructions:

The WIA Nominated RTO will send to the Learning Facilitator candidate a web site address and a password to access the Learning Facilitator training program. The candidate will access the website and follow the instructions to complete the training program. This will include the check of understanding, reading and other documentation. The check of understanding will be submitted by the candidate to the RTO, and feedback will be provided by the RTO to the candidate.

When the RTO is satisfied that the candidate is competent, the RTO will inform the WIA office accordingly, and then, subject to the candidate having provided either an appropriate card or a national police check and otherwise complying with the requirements, the WIA will register the candidate as a WIA Learning Facilitator.

Like the WIA Assessor, the WIA Learning Facilitator will be subject to audit, and re-registration every 5 years.

We hope to have the whole system in place by the end of this year.

Because of the obvious advantages of qualification, knowledge of the assessment system and compliance with the various working with children requirements, we intend to replace the current club or group nominated Group Leaders with a club nominated Learning Organisers, each of whom must be an accredited and registered WIA Assessor or WIA Learning Facilitator, prepared to have their contact details published and prepared to act as the first point of contact with a club or group for the WIA in relation to assessment and training matters and the first point of contact for someone wanting to know "how to become a radio amateur" or seeking assessment.

It is important that the respective roles of the Assessors and the Learning Facilitators/Learning Organisers are not confused.

In the Learning Facilitator Instructions this is hopefully made clear as follows:

It is fundamental to the WIA amateur assessment system that all assessments are to the same standard, and so WIA Learning Facilitators must ensure that they do not do anything that could, or could be seen to, assist a candidate.

Responsibility for assessments lies with the WIA Assessor(s) responsible, and Learning Organisers must take care not to interfere with that responsibility.

Over the next months, we will be approaching the clubs and seeking their support to ensure that those seeking training or assessment are always helped appropriately.

We hope that these changes will further enhance the credibility of what the WIA is doing with our partners, the clubs.

ar

WIA news

Results of 2007 Election of Directors

The WIA Returning Officer David Wardlaw VK3ADW announced the results of the 2007 WIA Election for four Directors as follows:

Robert Mark Broomhead	761
Roger Edward Cordukes	334
Edward William De Young	433
Ewan McLeod	775
Michael John Owen	828
Peter Richard Young	554

Therefore the four positions will be filled by Michael Owen, Ewan McLeod, Robert Broomhead and Peter Young.

Because of the long period between the finalisation of the election and the Annual General Meeting, the WIA Board has amended the Postal Ballot for the Election of Directors Regulations to enable the Returning Officer to announce the result of the election for directors before the Annual General Meeting.

WIA announces Chris Jones Award

WIA President Michael Owen VK3KI has announced that the WIA had decided to honour the memory of the late Chris Jones VK2ZDD by a new award, to be called the *Chris Jones Award.*

The award will not necessarily be made every year, but will be awarded to radio amateurs who have made an exceptional contribution to amateur radio and the Wireless Institute of Australia.

It will be a handsome glass trophy, inscribed, *The Chris Jones Award honours the memory of a man who was dedicated to the advancement of amateur radio and whose commitment and vision led to a new WIA and whose unfailing courtesy and genuine friendliness is fondly remembered by all who knew him.*

The first award will be given this year and has been decided by the WIA Board. The recipient will be announced at the Open Forum following the Annual General Meeting in Parkes, New South Wales, on 5 May 2007.

Two-letter Callsigns

The WIA knows that many amateurs are very interested in the issue of two letter callsigns since ACMA ceased issuing them more than 2 years ago.

The WIA has on a number of occasions sought clarification of ACMA's position.

In its most recent formal letter to WIA President, Michael Owen VK3KI, Alan Jordan of ACMA explained the steps that had been taken and the present position as follows:

On 19 October 2005, ACMA implemented new arrangements that included the introduction of three new licensing options under the Amateur licence type.

Under the new licensing arrangements, callsigns previously allocated under Unrestricted, Limited and Intermediate licences were carried across to the replacement Advanced licences. Under this arrangement, one of the blocks of callsigns that became available to ex Intermediate and Limited licensees under the Advanced licence was the block of callsigns having two-letter suffixes. Historically these callsigns have been highly valued amongst Amateurs. However, with the exception of Tasmania, the Northern Territory and the Australian Capital Territory, the anticipated demand for these callsigns would have exceeded the supply.

For this reason ACMA temporarily ceased the issue of two-letter callsigns while an equitable arrangement for their allocation was being developed.

Unfortunately, since October 2005, while some progress has been made on this project, ACMA has not had the resources to finalise this body of work. As you would be aware, ACMA is currently, in accordance with the 'Outcomes of the Review of Amateur Service Regulation', working to amend the Radiocommunications Licence Conditions (Amateur Licence) Determination No.1 of 1997 (the Amateur LCD) and introduce a Class Licence that will allow visiting overseas Amateurs to operate in Australia without having to take out an individual licence.

However, work on the Amateur LCD and the Class Licence is now coming to the point where resources can again be focused on the two-letter callsign project. It is therefore anticipated that procedures to resolve this issue will be in place by the end of June 2007.

The WIA President commented as follows: "I know that many have been very concerned at the inordinate delay, and in asking for formal advice, I had hoped that ACMA would at least explain the "equitable arrangement" they contemplate. However, at least a deadline has been set as to when the matter will be finalised."

Successful EMDRC White Elephant Sale

The Eastern and Mountain District Radio Club (EMDRC) conducted its annual White Elephant Sale (Hamfest) on 25 March 2007 at Heathmont, an outer eastern suburb of Melbourne.

WIA President Michael Owen VK3KI and WIA Director Robert Broomhead VK3KRB manned the WIA stand and were pleased to welcome 14 people who joined as new members of the WIA. The WIA stand also sold quite a number of books and merchandise, with popular items being the 2007 Callbook, Polo Shirts and Foundation Licence Manuals.

EMDRC club President Bryan Pliatsios VK3HXR reported the day to be a huge success, with attendance significantly up from previous years and a healthy participation from folk recently having obtained their Foundation Licence and their partners. "There was a lot of positive feedback from sellers and commercial traders who also reported the day to be a very successful and worthwhile event" Bryan said.

New BPL Trials in Queanbeyan, NSW

Full details have now emerged about the latest BPL trial in Queanbeyan, NSW. The trial was announced by Country Energy on the 15th March and is expected to be operational for at least 6 months from May this year.

The BPL trial plans to pass 300 households in the Queanbeyan CBD and Jerrabomberra areas, and will provide both access broadband and electricity network management information.

Freshtel will provide an Internet Telephony service to participating customers who, in addition to receiving a modem and access to the broadband service, will receive a free Binatone

continued on page 27

What, yet another ATV record attempt?

Dan VK2GG and Jack VK2TRF

Ho hum, how boring. Do you say? But wait a minute, what about an Australian ATV record using stock standard A/V sender/receivers sold by Jaycar, utilizing 15 mW over 175 km?

Remember, these units are designed to show Video from Foxtel set-top boxes from room to room, say up to 100 m. This is really a story about how you, the amateur, can get on 5.7 GHz ATV with minimal equipment. The authors' 5.7 GHz units are displayed in the photo. I purchased my set on eBay Australia for $150. Jaycar's will set you back about $250. An SMA socket was substituted for the original patch antenna. These are in the Amateur 6 cm band.

We are indebted to Peter VK2TPK and the boys from Hornsby and District ARC for allowing us to share the top of Mt Warrawalong (Watagan Forest) with them during the recent John Moyle Field Day contest.

Dan VK2GG and Graham VK2DWL found a spot looking through the aperture between some trees, having a southerly aspect. Jack VK2TRF travelled to Mt Gibraltar, some 175 km away. As usual, Jack brought the rain with him. Now Mt Gibraltar is a very busy site, having all kinds of nasty RF installations which could hamper the record attempt, or swamp the puny 15 mW from the transmitter. On the other hand, Mt Warrawalong is a Forestry Fire tower site, with mainly forestry UHF Yagis on it. It has a steep (possibly) 4X4 entry track, but first one has to gain entry past the locked gate. As the HADARC had already made the necessary application on the variety of forms, O.H. & S requirements, etc, all we had to do was to approach HADARC with cap in hand.

We have been "playing" with 6 cm ATV for several months. 76 km was quite a thrill, but of course 175 km was really exceptional. It seems that 5.7 GHz is a remarkable band. Dan had constructed a pair of 15 dBi horns (HDLANT from ARRL web site) out of copper sheet, and these proved reasonably effective over 10-25 km paths. For this attempt, Dan made a "tuppeny" feed out of WR137 waveguide, which he attached to his 1.2 m dish. Jack used a "Golden Dish" for improved gain over the original, a "Grid-Pack" style dish designed for use at 2.4 GHz. The brass mesh covering prevents excessive loss due to the wide spacing between the elements of the original dish at the higher frequency.

The rain came down quite heavily at Mt Gibraltar towards the end of the record attempt session, but not before P5 pictures were received at each end of the link. How's that for minimizing spurious RF emissions, using QRP for a record attempt? As usual, the hot sun melted the Tim-Tams at the Warrawalong end. Further successful ATV transmissions on 10 GHz and 2.4 GHz were made along the link for the purpose of the John Moyle event.

Equipment:

12-15 mW exciters (described above). Receivers as also described above. 1.2 metre dish with 'penny' feed (G4ALN). Modified Gridpack dish with 'golden mesh'.

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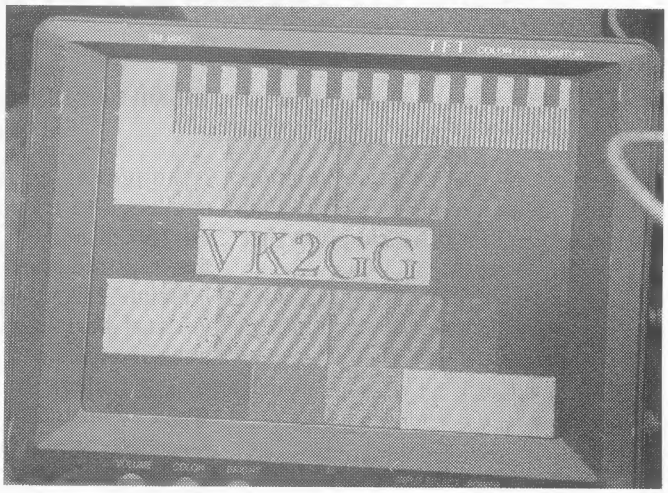
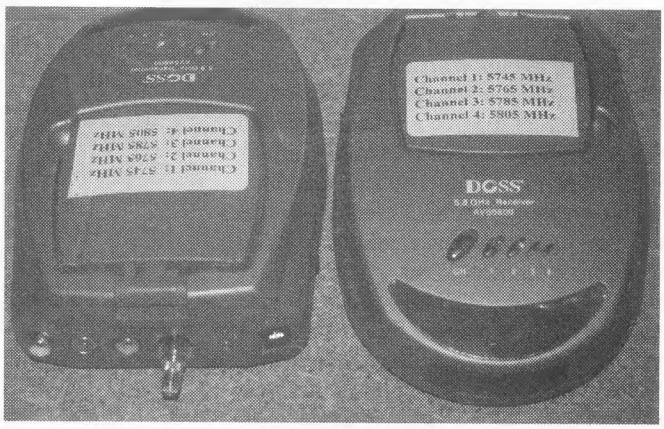


The picture received by VK2TRF

The picture received by VK2GG



The 5.7 GHz audiovisual transmit and receive units

See more pictures inside back cover

The VK5BUG 'BlackBelter'

A 160/80 m hybrid vertical aerial for suburbia

David 'Doc' Wescombe-Down VK5BUG

After reading aerial articles by McCoy (1960) and Diamond (2004, 2005), I decided to do something about operating on the lower amateur bands.

This project involves the construction and erection of a hybrid aerial for 160/80 m operation, and it is hybrid given that it features:

1. A combination of sloping wire and vertical alloy tubing radiator construction.
2. A physically large capacity-hat (top-hat) incorporating guys.
3. Above ground counterpoises for both bands.
4. Ground mounting.

The top hat is a combination of hard-drawn copper wires which also act as guys, four aluminium tubes in a horizontal cross arrangement and a metre-long alloy whip at the top.

Aluminium tubing has been used for the 10 m ground-mounted vertical radiator element because it happened to be in the workshop overhead storage rack and I wanted to employ it more usefully. The aerial is not excessively tall for an inner-city house block and the four guys terminate around 2.1 m above ground on boundary fencing or a dividing trellis so that they do not interfere with the other backyard activities.

Not being an advocate of coaxial cable as aerial feeder for QRP installations, I used pre-loved open-wire TV ladder-line (ex-Hills TV) of which I had almost a full roll. Initial trials as a balanced feeder were not encouraging so I simply joined the conductors at each end and used it as a single wire component element of the radiator, thus providing an effective LOA of approximately 27 m. A very short Zepp feeder of the same open-wire line connects it to the aerial tuner. Should I wish to use the long balanced feed-line for subsequent aerial experiments, it is already in position and tidily taped to its polyethylene cord catenary.

After more than three decades of QRP CW activity on 20 and 40 m, I thought it might be a challenge to try the same on 160 m and 80 m, and that sent me searching the literature. I like constructing vertical aerials and have encountered no definable noise problems from them when compared to various horizontal types, contrary to what some literature might state. From this research process it soon became apparent that there are more myths and misconceptions surrounding vertical aerials and related matters than perhaps any other aspect of wireless communication, and amateur radio in particular.

Some manufacturers have made certain claims; others have stated alternative perspectives; yet others claim that their vertical aerials require no radials, counterpoises or any form of grounding; and many amateurs have chimed in with various opinions based on something they had read or were told in good faith. One only has to listen on air to hear the various proponents and supporters of the different theories and claims, all putting their hands up as being correct. Certain advocates of particular aerial theories have been given almost revered, and therefore apparently unchallengeable, status over the years, so a couple of generations of amateurs may have been following their theories through osmosis, convenience, necessity of circumstances or simply without question. It has long bemused

Photo 1: David VK5BUG holding the capacity top hat alloy tubes and their mounting boss.

me that some of the most vocal armchair experts have not actually built large MF/HF verticals and tested the theories themselves, especially using QRP which is the great leveller of amateur station installations. I tend to take an alternative approach, and whilst not disregarding the theories, build aerials and make them work to the standard I require with low power. Sometimes their success has flown in the face of theories, and maybe that is what keeps me doing it.

I am not sure where or when all of the myths about feed-lines, counterpoises and radials began, but perhaps it was when amateurs (and, later on, CB operators) started linking SWR readings to power being reflected back into their transmitter or transceiver final stages to be dissipated as heat. Others simply saw reflected power as lost power.

As former ARRL technical coordinator Haerle (1994a) explained in detail, neither of those notions is a fact:

Since a 10:1 SWR on 100 feet of RG8U at 4 MHz increases loss by less than 1 dB, don't worry about the fact that the SWR rises above 2:1 at the band edges.....the station at the other end won't be able to tell the difference. (p. 20)

Since the end of World War II, with the introduction of coaxial cable and SWR meters, too much misleading information has been circulating to the point where the myth has become fact in the mind of many. A chain of fallacy perpetuation has evolved, leading to categorical statements such as:

1. Subtract your reflected power percentage from 100 to calculate the usable transmitted power output (commercial nomographs have even been printed for this erroneous claim!).
2. Prune your vertical to exact resonance and feed it with an equally exact multiple of half a wavelength of RG58CU, RG8U or RG213 coaxial cable.
3. You must always have a perfect aerial-to-feeder match.
4. The efficiency of your aerial is based on its SWR: the lower the better.
5. Install earth stakes/ground rods to make your vertical work better.

The long-term result of this type of propaganda is paranoia to avoid any mismatch and system reflection at all costs. What this SWR hang-up has done is cause us to focus our impedance matching efforts at the wrong end of our aerial feeders.

If antenna impedance issues are keeping you awake at night, install an antenna tuner using air-dielectric capacitors and silver-plated coils which will minimise power loss from your tuner, allowing it to show close-to-50 ohm impedance for your transceiver. Don't fret over non-resonant aerials because you can use your tuner to provide a resonant system: aerial, feeder and tuner.

Probert (1988) presented an informative article which included the statement:

However, there are still amateurs who use balanced feeder for a variety of reasons. There are probably many more who would use them if they were better understood. (p. 27)

I prefer to use balanced feeders instead of coax because they are much less lossy, handle higher voltages and provide a greater range of aerial tuning to advantage operational bandwidth without retuning. Quite handy in contests, for example. They are easier to connect to anything at either end and not at all difficult to route and secure despite some claims to the contrary: it only requires a simple paradigm shift. That is why I have used them extensively over the years, including with the recent VK5BUG 'Blackstick' and 'BlackBelter' ground-mounted verticals at my present QTH that allow me to operate effectively from 160 to 10 m inclusive.

Photo 2: VK5BUG holding the top tubing section and capacity hat 'cross' for the 160/80 m "BlackBelter".

Don't let anyone try to tell you that you will 'lose a heap of power in your tuner'. If it has a transmatch configuration, it will probably contain a silver-plated roller inductor and two hefty, wide-spaced variable capacitors: none of them consume much power BUT toroidal baluns and accumulated resistances will!! Toroidal baluns also have saturation issues which are really worth researching, irrespective of what the glossy sales pitches might claim. You will have no problem if you use balanced feeders with a good balun. If you are coax-bound without a tuner and have a balun at your aerial, you could also be fine with modest power and an SWR less than 2:1. However, if you cut your aerial for mid-band resonance and are rewarded with the corresponding low SWR, then find it is way up over 5:1 at the band edges, you may immediately think 'Balun'! After installing a 1:1 ferrite-core balun at the aerial feed-point, you then note that the SWR drops to about 1.5:1 at those band edges, and

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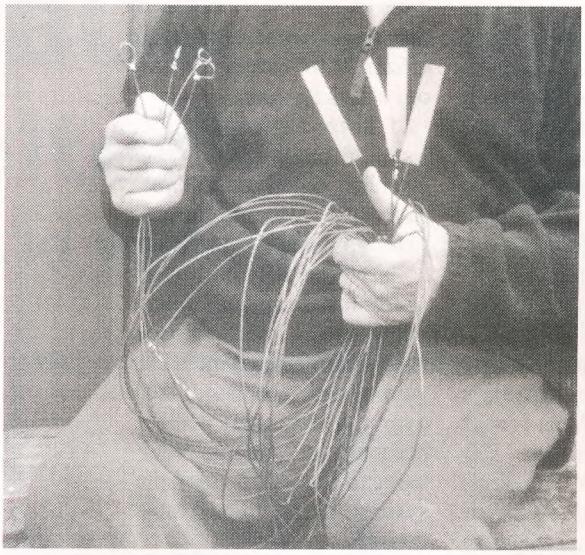

Photo 3: Capacity hat wires showing loops for guy ropes and the zinc plated "solder lugs".

so you naturally think that all is now well: the balun has fixed the mismatch problem. Not so.

You would actually be better off without the balun because your aerial has not changed at all. The SWR is as high as it ever was and you have been duped by a meter reading. As Haerle (1994b) continued to advise us:

The meter is reading less reflected power, all right, because the high reactance currents on both sides of resonance are being absorbed in the balun's ferrite core. That means that both radiated and reflected power are down, making the meter read lower forward and reflected power. (p. 14)

To operate across several bands with their great variations in impedance and SWR, you will need the balun effect offered by a really good transmatch or a coaxial balun. For balanced feeders, install a 4:1 balun (or higher ratio) and this can be a simple coil of coaxial cable (choke balun) just before it connects to the balanced feeders, or it can be a solenoid type wound on a short length of 100 to 200 mm plastic water pipe (Rollema, 1992; White, 2000). In addition, many editions of the ARRL Antenna Handbook will give details of choke baluns for the various amateur bands.

Worth noting at this point too, is Maxwell's (1973) comment:

High SWR in an open wire line at HF caused by a severe mismatch will not produce antenna currents on the line, nor cause the line to radiate, if the feedline currents in each wire are balanced and if the spacing between wires making up the feeder are small at the wavelength of operation. (p. 22)

With all this happening, we also need to tune our aerial at the operational end, so we have to impedance match at the feed-line input. That will create enormous benefit to operating flexibility because it provides the correct load impedance for the transmitter at whatever frequency we choose in any entire band. Broad-banding the aerial will only help to a limited degree and is not a preferred method for most situations. Another win for the pi-tank output circuit of valve finals that many amateurs still prefer!

With that information under the belt, it is time to turn to the aerial construction for this project. My requirements were simple by most standards:

1. Provide belting performance, given the geography and low power used.
2. The final form and physical siting of the aerial had to be successfully negotiated with my dearly-beloved Ingrid. Hint: we took a six metre length of 65 mm OD aluminium tubing which was at hand, painted it black and then simply propped it up in several backyard positions each for a few days so we could get an idea of any visual or physical impact that the planned aerial might have. Looking at it, having to walk by or around it to garden, tend to chooks and birds daily, and just seeing it in context really helped us make the site choice.
3. Local Council regulations needed to guide the construction and location.
4. Minimal cost and use of materials at hand as much as possible.
5. Tunable with effective impedance matching across each entire band.
6. No coils, traps, linear-loading or lossy baluns.
7. Capable of installation by a husband

and wife team given appropriate weather conditions.

8. Be black in colour! Aesthetically quite appealing among the established trees and tennis court surrounds of the area, and multi-neighbour input verifies that black drastically reduces the visual impact from their perspectives.

Well, we have achieved all of the above, and here is how it went together.

Ground-mounting

A 3.7 m length of 38 x 25 mm galvanised RHS which was pre-drilled to later accept a 2.5 m piece of 75 x 40 mm radiata pine mounting board, and then set in 60 kg of fast-setting concrete mix poured into a 700 mm x 300 mm x 300 mm hole. This initial part of the proceedings was then left for about 16 hours to set, after which I painted the RHS and board in our best Aerial Black paint. The exposed open end of the RHS was plugged with scrap poly foam and covered with silicone sealant to keep the weather out.

Capacity hat

The top hat is made from a 100 mm x 44 mm thick-wall aluminium tube boss, drilled to accept two 280 mm x 18 mm thin-walled tubes positioned at right-angles to each other through the boss, one 50 mm above the other to minimise weakening of the alloy boss in windy conditions. Both 280 mm tubes were installed and locked in place by stainless steel 10 x 6 mm hex head bolts. Two slots were cut in the open ends of both tubes (8 slots altogether) and a 20 mm stainless steel hose clamp fitted to each slotted end: these would soon secure the four 1.8 m alloy tubes of the capacity hat system (see Photo 1).

Those four 15 mm diameter tubes were then polished with emery cloth for about 150 mm and smeared with "Alimox" conductive paste before being inserted into the tubes and the hose clamps tightened (see Photo 2).

Four 5.2 m lengths of hard-drawn copper wire each had a small loop formed in one end to accept the guy ropes and a zinc-plated giant solder lug soldered to their other end (see Photo 3). These wires, plus the four alloy tubes, plus a 1 m alloy whip top-piece, all form the capacity hat of this project aerial (see Photo 4).

Radiator

The monopole was assembled from four sections of telescoping aluminium tubing with 300 mm insertions each polished with emery paper and liberally coated with conductive paste. Four 150 mm long slots were cut with an angle grinder (cutting blade of course!) and two stainless steel hose clamps were cinched up at each telescoped junction. I have not specified the lengths and diameters of the pieces of tubing that I

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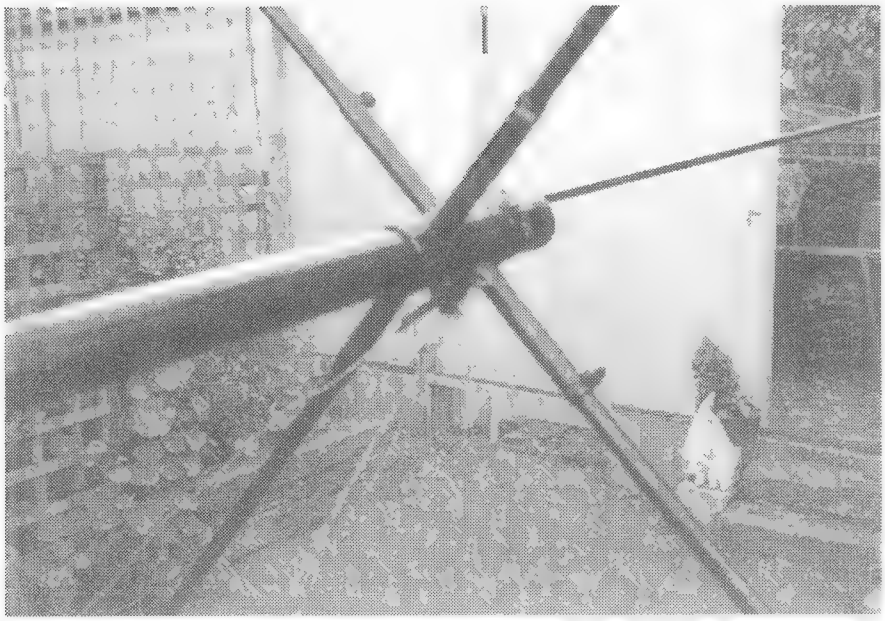

Photo 4: The capacity hat with the four 5.2 m wires, the four 1.8 m alloy tubes and the 1 m alloy whip.

used because they were simply at-hand, and anyone contemplating building something similar will choose what is available to them. I conducted tests with overall vertical monopole lengths of 10 m, 11 m and 14.4 m just to see what differences I could detect, and there being nothing of note to report in that regard, I reverted back to the shortest length (10 m) and then simply attached the TV ladder-line, giving the LOA of 27 m for Zepp feeding into the aerial tuner as previously stated.

Installation

Not surprisingly, this proved to be the biggest challenge of the project and was delayed for three weekends due to weather conditions. When a breeze-free Sunday morning finally arrived, Ingrid and I collaborated to attach double 5 mm black poly guy ropes to each copper wire loop and then stand the vertical monopole up on its bottom end. That activity went reasonably smoothly, but it was not physically possible to construct the aerial adjacent to its concreted base mount, and so we had to walk the very wobbly (because of the capacity hat influence on centres of mass and gravity) device some 15 metres across the lawn, around a clothesline, avoiding a tall almond tree which seemed to be reaching out to grasp the aerial and guy ropes, and over one of our above-ground garden railway tracks. After much huffing and puffing we had it in place. We initially tried a glass wine flagon but then opted for a ceramic tile as the stand-off insulator beneath the alloy tubing base and this was silicon-glued in place. All four guys were tied off and then re-tensioned sequentially so that they not only provided the necessary movement restraint, but also formed some acceptable angles to the vertical element. A poly cord catenary was routed from the wooden mounting board to the workshop fascia where two ceramic feed-through insulators were already waiting. The ends of these, inside the workshop fascia, carry the Zepp feed. The sloping wire formed from the TV ladder line outside was connected to one of the feed-through insulator's outer terminals. The open-wire feeder was routed from the workshop fascia to the mounting board, and taped to the catenary cord every 300 mm or so. Attachment to the aerial base was then made.

The aerial has two 20 metre long above-ground counter-poises for the 80 m band and two of 42 m for 160 m. The dual rails of our brass 45 mm gauge garden railway track serve more than one purpose in life, as do the three neighbours' tennis court fences when counterpoises and radials are required!

The aerial tunes very responsively on both bands with no retuning required across the entire CW section of each. The first 80 m call on 31 October 2005 with 5 watts input CW from an Icom IC-731S resulted in a 229 report from a DJ4: not wonderful, but we did beat the European noise level on flea power and, with CW of course, he could hear me, so he could work me! Next stop, 160 m to see how much of VK and ZL we can belt into with 5 watts!

Acknowledgments

It would be very remiss of me not to express my appreciation to Ingrid for her acceptance and assistance throughout the project; George VK5ALS for his idea of adding the one metre whip to the capacity hat and his collaborative discussions-in-general; and Drew VK3XU for giving me the initial idea and some constructional hints via his two-part 160 m aerial article as referenced below. Thank you all.

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ar

A beam position indicator project

John Drew VK5DJ
http://vk5dj.mountgambier.org/

This project describes a complete azimuth and elevation readout system that outputs to array driving motors. Motor movement may be initiated by either front panel switches, internal calculations of moon or sun positions, or by external computer control.
The shack unit may find use as a replacement for lost or broken rotator controllers.

The traditional method of determining the direction of a beam is to use a linear potentiometer driven by a gearing system to convert 360 degrees to the 270 degree motion of the potentiometer. A bridge circuit with a calibrated meter enables the direction to be read out. The potentiometer method has the advantage of providing an 'absolute' reading. That is, on power up it will immediately provide a beam heading without calibration. If you are lucky, you might achieve four or five degree accuracy.

This paper will not discuss 'incremental' indicators which is a method based on synchronisation. Some readers will be familiar with the old 'kerchunk' TV rotators that pulsed their way around and kept an indicator in step - well, more or less. Other incremental indicators may now be more sophisticated but usually require re-synchronisation whenever they are powered up.

A common method, used by those who require greater precision than that provided with a potentiometer system is to use a Gray coded wheel. The Gray code is a binary code that, unlike the standard binary count, changes just one binary digit at a time. For example, in standard binary, a count proceeds like this: 0000, 0001, 0010, 0011, 1000, 1001, 1010, 1011 and so on.

In Gray code the count proceeds like this: 0000, 0001, 0011, 0010, 0110, 0111, 0101, 0100 and so on.

A Gray coded wheel may have any number of bits - in practice <16 and in practical terms for amateurs <13 bits. The lines on the perimeter need to be very fine once 12 bits is reached, and for amateur constructors may require a fairly large diameter wheel (for example 150-300 mm). A Gray coded wheel has LEDs and photosensitive detectors to read out the active bits. The light source and detectors must be well aligned and use a fine slot to overcome ambiguous readings (hence the use of Gray code to overcome ambiguities). They are not a trivial device to make.

This article describes a new approach using an absolute position 10 bit encoder chip, by austriamicrosystems. The AS5040 uses 1024 Hall affect sensors to determine the location of a magnetic field and thereby provides a 10 bit output that equates to 0.34 degree definition. A special diametral (2 * 2 poles) magnet produced by Swiss Company Bomatec AG is the rotary component of the system.

The AS5040 has been produced to provide the radial location of steering wheels, accelerator pedals and so on in fly-by-wire applications. The chip is capable of providing accurate readouts without missing a location on a shaft rotating at 600 rpm. It is not anticipated that the capabilities of the chip will be stressed by beam rotation speeds! The chip samples each location at 12 kHz.

Position is determined by a rotating, small diametral magnet (6 mm * 2.5 mm) using NdFeB alloy. It is nickel, coated as the material is quite brittle. The magnet is placed 1-3 mm above/below the AS5040 chip with an alignment better than 0.25 mm. Fortunately, the chip supports a calibrate mode to allow fine adjustment. The AS5040 is a small surface mount device and measures about 6 mm*5 mm. The chip manufacturer's website is http://www.austriamicrosystems.com/04segments/industry/AS5040.htm

This project was designed to use the AS5040 encoder and describes an electronic solution to beam indicators. How the masthead unit physically interfaces to the antenna system is for your own ingenuity, as every system is different. Note that this project was first developed when only the AS5040 (10 bits or 1024 positions) was available. Since then, the AS5045 with 12 bits or 4096 positions has become available providing 0.1 degree readout. The project description is the same for both chips but

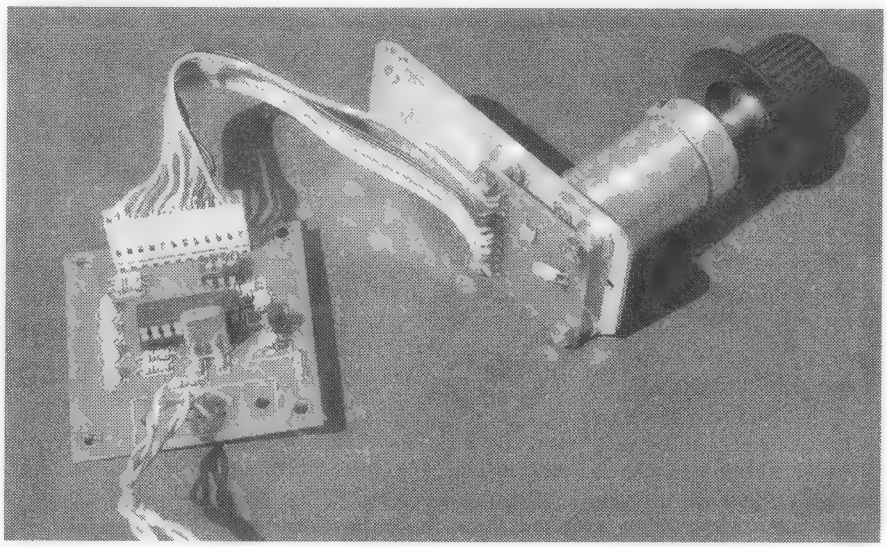


Photo 1: Antenna Unit

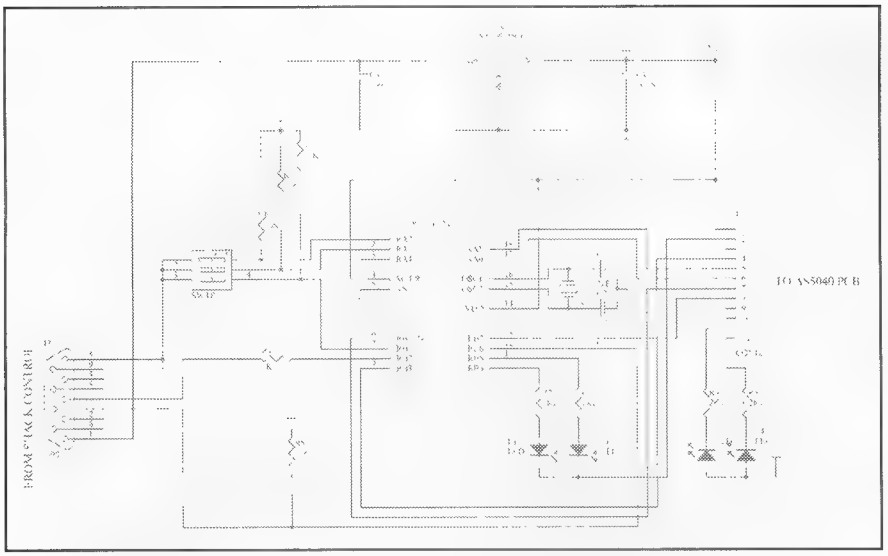


Fig 1: Azimuth and elevation units schematic
Drawn by R Lemke VK3ZQB

slightly different programs are required for the AZ/EL unit and the shack unit. These are available from my website.

Although primarily designed as a moderately high definition system, as the project developed it became obvious that a little extra effort would also create a replacement control unit for those amateurs who have a rotator without a control unit.

So what is it and how does it work?

The beam indicator system displays azimuth and elevation headings for an antenna system. It calculates the position of the sun for antenna calibration and the moon for EME experiments. The system can either auto track from internally developed data or from a computer with appropriate interface software. Tracking may also be manually controlled from front panel switches. The tracking accuracy is better than 0.5 degree using the described encoder chips. With the aid of software averaging, the readout in the shack unit is 0.1 degree increments for the AS5040 but if an AS5045 is used the readout provides 0.1 degree increments without the need for averaging.

The unit has a control box located in the shack and one or two masthead boxes.

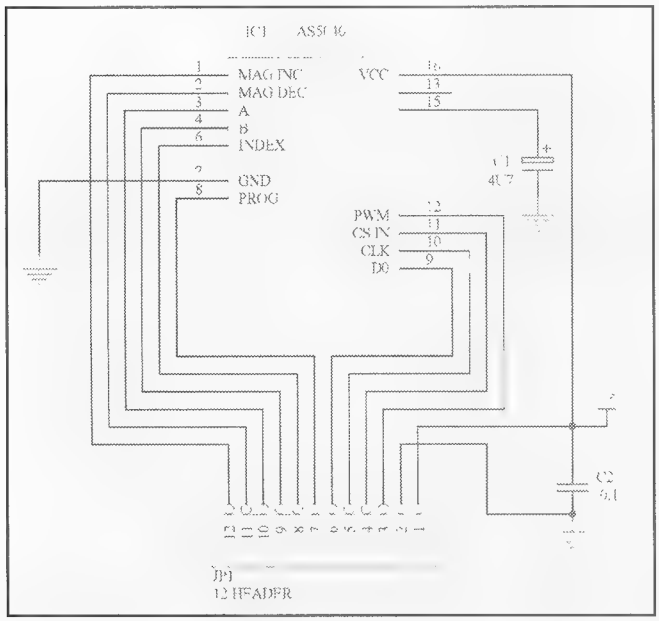


Fig 2: Rotary encoder schematic.
Drawn by R Lemke VK3ZQB

The unit(s) at the masthead measure(s) the position of the antenna to an accuracy of 1:1024 or about 1/3rd of a degree for an AS5040, or 1:4096 or about 0.1 of a degree for the AS5045. The reading is 'absolute' meaning that the antenna does not have to be sent back to a starting point in order to recalibrate if the power disappears. Readers who want more information on accuracy are urged to read my website for further detail.

On receiving a request from the shack unit, the masthead unit sends its data to the control unit in 9600 baud ASCII. If elevation measurements are required, a separate elevation unit sends serial data to the shack unit upon reception of a controller poll.

The shack located control unit has a PIC controller chip that receives the serial input from the masthead units and displays the azimuth and elevation positions. The control unit can operate in either manual (local control) or auto (computer control) mode as determined by a front panel switch. Further switches determine if the position calculated is that of the sun or moon and if it is calculated internally or externally. External calculations would enable satellite tracking. The control unit may be set to delay antenna movement when the direction reverses to avoid undue stress on antenna elements and the rotator itself.

The output of the PIC18F4620 drives five transistors (four directions and a brake) which in turn drive five relays that provide power and direction control.

In addition to receiving signals from a serial source, the project is designed to accept input from a potentiometer like those in most rotators. The variable voltage from a potentiometer wiper is directed to A/D converters that may be translated to a beam heading. Some rotators use a rheostat so some modification may be required to produce the voltage divider effect. A reference of ground and regulated +5 V is available on each DB9 for potentiometers.

The unit may be set up to allow for readings below the horizon, whether there are one or two sensors, presence of a brake, variable delay before direction change, input type (serial or pot), or whether the pot sensors cover more than 180 or 360 degrees and crossover points. After initial programming the operational conditions can be varied by accessing setup mode from the front panel switches.

The masthead unit

The masthead unit uses a 16F628 PIC to query 10 bit data from the AS5040 (12 bit from an AS5045), which it then assembles into a packet of information and sends to the shack unit serially

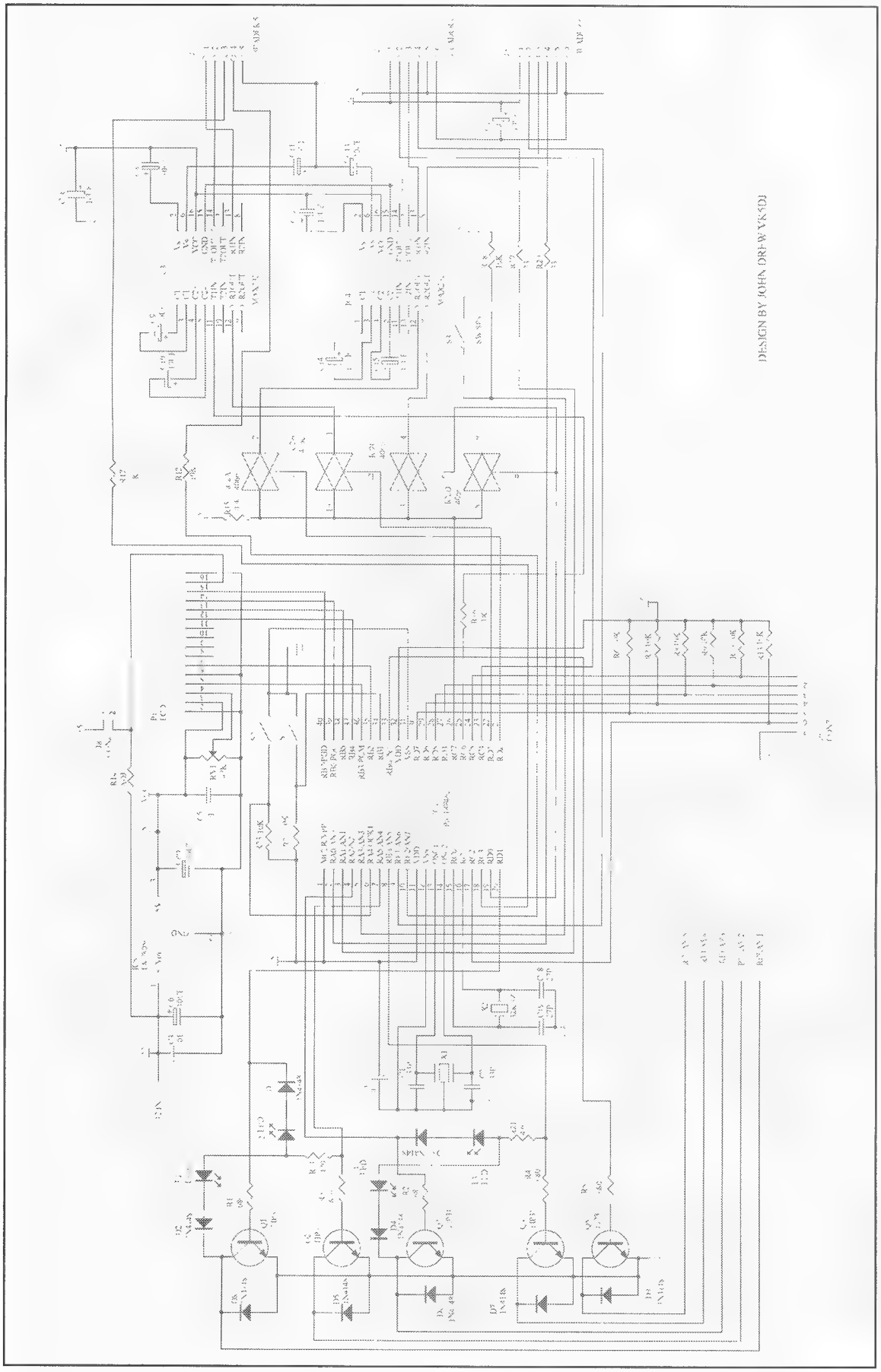


Fig 3: Antenna controller schematic.
Drawn by R Lemke VK3ZQB

using 9600 baud, 8 data bits, 1 stop bit ASCII.

The antenna azimuth and elevation units are identical.

Two circuit boards support each direction sensor at the masthead. The first board is deliberately made as small as possible to allow for different mounting methods of the AS5040 and its rotating magnet. The board contains a socket, the encoder chip and two capacitors. The magnet spins above the chip and is the only moving part. The construction makes for a device that has little to wear and is highly resistant to dust and other pollutants. Note the accompanying photos for construction details. This board should be mounted so that its position beneath the magnet can be adjusted in the X, Y, and Z planes.

The masthead unit contains a PIC16F628 and an LM78L05 provides the 5 V regulated power. An original plan to include a MAX232 chip to convert TTL levels to those more suited for serial data transfer was found unnecessary. Experiments using a 100 m length of CAT 5 twisted pair cable showed TTL worked fine at the data rate chosen. Remember that if you choose to add an external MAX232 at the antenna end you will need to use another at the controller end (see later).

The Azimuth and Elevation programs for the 16F628s are the same.

The masthead units may be placed into calibrate mode (SW1 momentarily on, then off when using AS5040 but SW1 left on for AS5045). In this mode the AS5040 outputs a number that may be used to position the board under the magnet. The controller unit in the shack will display "Magnet =" followed by a number. As the magnet revolves the displayed number should vary by less than 30 for a 360 degree rotation. Fortunately this seems to be less critical than the datasheet suggests but could be an important determinant of tracking accuracy. Only J2, the azimuth DB9, is coded for use in calibration mode. The AZ/EL mode should be set to 5.

The masthead unit has another switch SW2 supporting a 'terminal' mode. If you want to make an early test of your antenna unit place SW2 in the on position and connect the serial output to a computer running Hyperterminal at 9600 baud, 8 data bits, one stop bit and no parity. The unit will display "Azimuth = XX degrees" where XX is the bearing. I used this feature to provide a demonstration at GippsTech in July 2005 before the construction of the controller unit.

SW3 on the masthead unit allows the count to be reversed to suit different mounting methods resulting in clockwise or anti-clockwise movement.

Power consumption of the antenna unit is a few milliamps. The antenna unit has four connections: Ground, 9600 baud ASCII out, handshake in, and 12 V power in. The recommended cable is CAT5 network cable. CAT5 has three pairs. Pair each active lead with an earth wire.

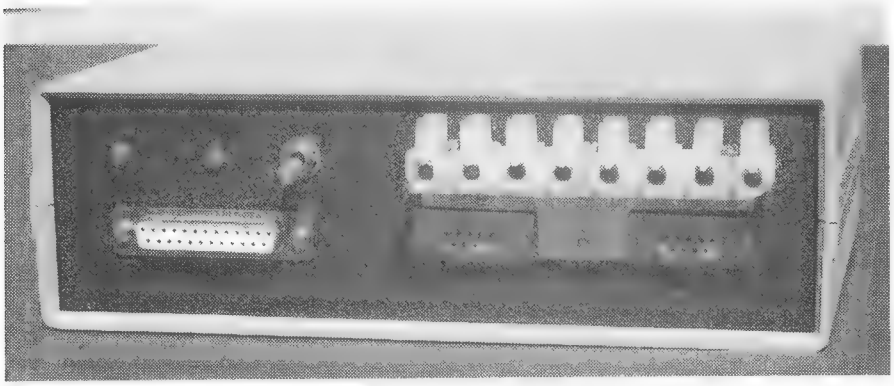


Photo 2: Rear view of completed prototype

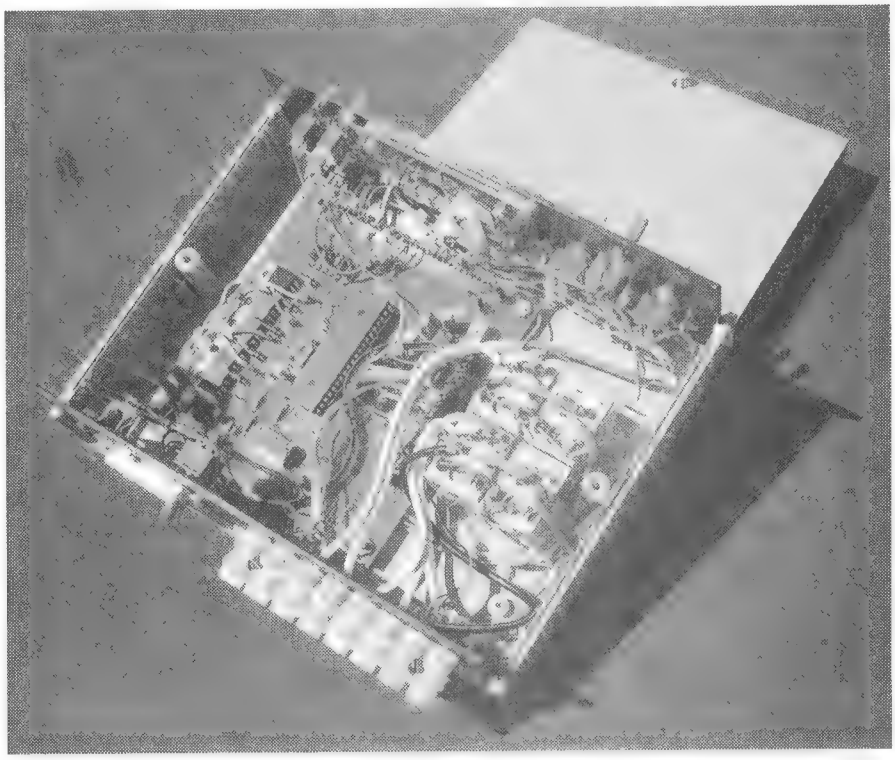


Photo 3: Internal construction of prototype

The Controller

This shack based unit utilises 12 V at up to 400 mA to power relays and the board. The board has:

- LM7805 derived 5 V regulated supply
- PIC 18F4620 (a 40 pin device with 32 k of program memory, RAM for variables and long term data storage in EEDATA memory)
- 4066B CMOS switch to steer the incoming serial data from three sources to the USART input port on the PIC
- 1 or 2 MAX232 chips depending upon whether you require the second for the antenna units. Each MAX232 can support two inputs

and outputs. One for the computer interface is mandatory to ensure reliable communications and correct data sense.

- 5 TIP31C NPN power transistors to switch the relays.
- 5 relays with 12 V coils, DPDT 10 A contacts to provide the heavy duty switching. For each of azimuth and elevation, one relay switches the windings to determine direction while the second switches power. The power relay closes 50 ms after the direction relay.

General description of the controller operation

The PIC operates at a frequency of 32 MHz determined by the 8 MHz crystal using a 4* multiply mode. This frequency is used for internal timing and must not be substituted.

The PIC sends a low active handshake signal to the masthead unit, clears its receive buffer, switches on the appropriate gate of the 4066B to transfer the data from pin 3 of the DB9 and checks the data stream for an "A" or an "M", and then loads the value from the masthead unit and the checksum. If the checksum confirms the data is correct, the value is converted to degrees with one decimal place and displayed on the LCD.

In the process of conversion of the elevation raw number, the controller will allow for any below horizon measurements. This is a setup option that may be altered at any time. However, most of us won't be in that wonderful position of living on hill tops!

Assuming that both azimuth and elevation sensors are present or activated in setup, the PIC will next check the elevation sensor in a similar manner to the azimuth process.

If the front panel switch is in Auto position, the device automatically tracks the antenna, switching data as appropriate through the 4066B. If external calculations are requested then computer data becomes available after raising the CTS line to signal the computer to send.

A simple check sum is used for all data inputs and, if confirmed, sends the information to the decode section for triggering the relays.

If the front panel switch is in the manual position the relay operation is controlled by the four spring loaded front panel switches – up/down, left/right. The switches do not directly control the relays but are used to inform the PIC of required moves. This enables the use of a delay function to prevent too rapid a changeover of direction motors in the interests of beam survival. The delay is configurable from 0 to 6 seconds. Hysteresis may be added in 'Auto' mode to minimise hunting.

The two line LCD display usually displays the azimuth and elevation on the top lines while tracking information appears at the bottom. A star is appended when the controller is waiting for the beam to come to rest.

The LCD is also used to display the configuration states. These are accessed by putting the device in 'Update mode' by putting the Auto/Manual switch in 'Auto' position and holding the 'UP' button. Once 'Sec =' shows, the various options may be accessed using the UP/DOWN buttons, while LEFT/RIGHT increases or decreases values. The memory is updated ONLY if data is changed and ONLY when the menu moves to the next item with the 'Up' or 'Down' buttons. Returning the 'Auto/Manual' switch to manual leaves the menu and returns to normal operation.

The order of display is: Seconds, Minutes, Hours, Day, Month, Year, Degrees below horizon, Brake/limit, Delay, AZ/EL mode, AZ spread, EL spread, AZ offset, EL offset, AZ hysteresis, EL hysteresis, HT ASL, Longitude, Latitude, Park AZ, Park EL.

Seconds, Minutes, Hours, Day, Month, Year

These continue to count on the display until the reading is changed with a 'left' or 'right' key at which point you can adjust the number at leisure. Moving on with the 'Up or 'Down' key updates the memory and the clock again starts. To avoid a transition of minutes happening while you are adjusting, I recommend changing the menu 'seconds' to 5, then when your external clock seconds read 5 press the 'Up' key. You now have 55 seconds left to adjust the minutes readout to the correct value and so on. Once menu mode is closed, time is displayed if the internal/external switch is placed in the external position.

Degrees below horizon (antenna)

Set this number to suit your antenna's capacity to move below the horizon. The auto system will not drive your antenna beyond this. Your encoder settings will need to be set to allow readings below the horizon. This works for both serial and potentiometer devices in elevation mode.

Brake/Limit

0 = no brake, north stop
1 = brake, north stop
2 = no brake, south stop
3 = brake, south stop

Delay

Delay in seconds before swapping directions to protect the mechanisms.

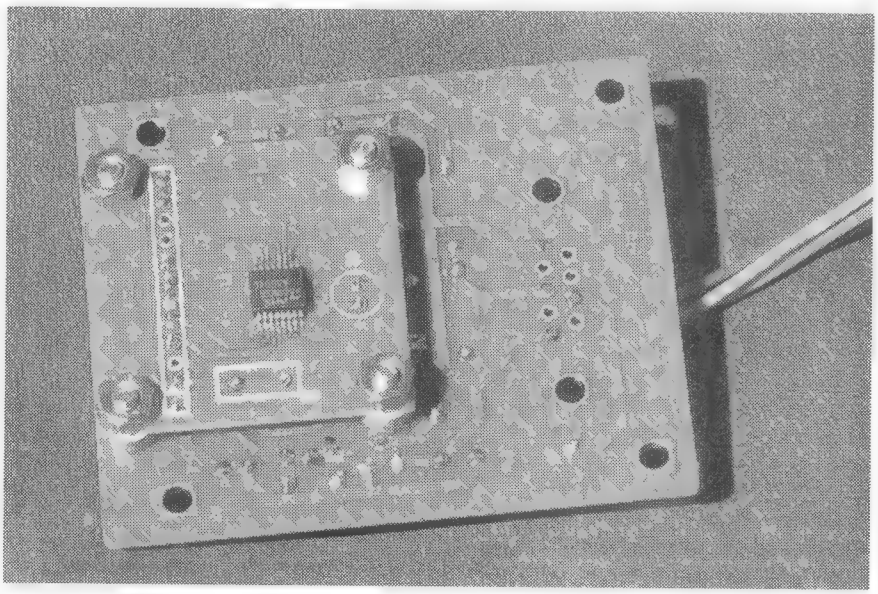


Photo 4: Double mount sensor unit

AZ/EL mode

Modes are determined by using the number in the table below.

Used for potentiometers only. It's the number of degrees +180 represented by the extremes of pot movement. This enables scaling to determine the range covered by the pot. NOTE that the program adds 180 degrees to the numbers shown, so entering a 0 sets a 180 degree spread, while adding 200 would set a 380 degree spread. This addition of 180 was necessary to save PIC memory.

AZ spread has a default of 180 (360 coverage) while EL spread has a default of 0 (180 degree coverage).

Value	Az	Az mode	El	El mode
0	-	-	-	-
1	yes	pot	-	-
2	-	-	yes	pot
3	yes	pot	yes	pot
5	yes	serial	-	-
7	yes	serial	yes	pot
10	-	-	yes	serial
11	yes	pot	yes	serial
15	yes	serial	yes	serial

AZ (and EL) spread

Azimuth Offset

Used for potentiometer input only due to their capacity to work beyond 360 degrees (see AZ and EL spread above). This offset establishes limits beyond the normal bounds. Azimuth offset will cater for rotators that have no end stop or will move perhaps 10 degrees beyond north or south.

Elevation Offset

Used for potentiometer and serial input systems. The offset enables negative or beyond 180/360 readouts. The default value is 90 degrees so a 360 degree AS5040/45 will provide readings from -90 through 0 to 180 finishing at 270 degrees.

With a potentiometer you may choose to set 'Elevation Spread' (see above) to 200 degrees thereby slightly improving accuracy then set 'Elevation Offset' to 10 degrees resulting in a cover of -10...0...180...210. Don't forget to set 'Degrees Below Horizon' to 5 degrees if your antenna will go below zero.

For auto tracking reasons it is critical that your antenna sensor reads further below zero than your 'Degrees Below Horizon' setting to avoid an antenna being driven beyond a limit and causing mechanical damage.

Azimuth/Elevation hysteresis

The mechanical realities of moving antennas require hysteresis to be built into the system to avoid hunting in auto tracking mode. Numbers in this item represent 0.1 degree increments so a value of 10 will cause the auto function to switch off when it is within 1 degree of the computed position.

Height above sea level

In metres, used by the sun and moon routines.

Longitude in degrees

Use positive for degrees east of Greenwich, negative for west.

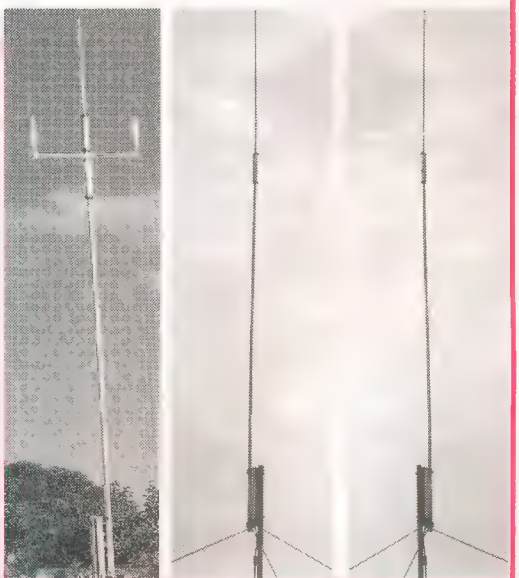
TET-EMTRON

Antenna Manufacturers

New

Tet-Emtron Vertical Range

TEV-4 TEV-3 TEV-3Warc



New Tet-Emtron Vertical Range

- All Aluminium with Stainless steel hardware.
- No adjustment needed to main antenna.
- Light.
- Free standing—no intrusive guy wires.
- 1 kW PEP power rating.
- Can be ground mounted or elevated.

The new TET-Emtron Vertical range is designed with ease of use in mind. Tuning is done by the radials when the antenna is in its final position (where possible).The radials can either lay on the ground, be buried or hang from the elevated antenna. The antenna comes with a set of radials that has a resonant radial for each band. Further sets can be ordered from TET-Emtron if desired.

See the web site for more info and a complete dealer list.

40 Blackburn Street
STRATFORD
Victoria 3862 AUSTRALIA

Ph: 61 3 5145 6179
Fax: 61 3 5145 6821
ABN: 87404541761

www.tet-emtron.com
Email: rawmar@hotkey.net.au

Antenna	TEV-4	TEV-3	TEV-3 Warc
FREQUENCY	7, 14, 21, 28 MHz	14, 21, 28 MHz	10, 18, 24 MHz
ELEMENT HEIGHT	4090 mm	3800 mm	5025 mm
FEED IMPEDANCE	50 ohm	50 ohm	50 ohm
Max. RADIAL LENGTH	10.7 metres	5 metres	7.5 metres
SWR	1.5 or less	1.5 or less	1.5 or less
POWER RATING	1 kW	1 kW	1 kW

Palstar

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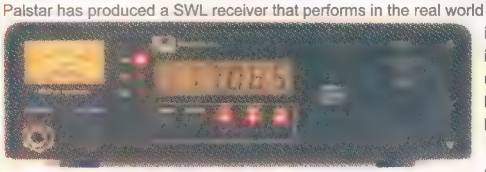
Superbly engineered and robustly built in the USA

The PM2000A Watt meter

measures and displays forward power, reflected power, and SWR simultaneously on it's dual movement meter system in the frequency range. Accuracy is assured because the WM150 has a true shielded directional coupler. The backlit meter can display either peak or average power readings, and has 300 and 3000 watt range settings.
QST found that the Palstar WM150 is the only wattmeter that has true Active Peak Reading. The PM2000A is the next generation of watt meters from Palstar.

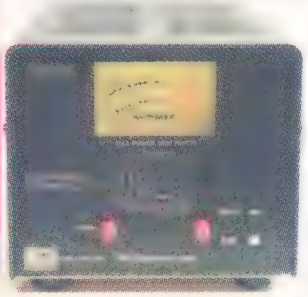
PALSTAR R30CC Shortwave Receiver

Palstar has produced a SWL receiver that performs in the real world with no overloading in the front end. It is a small, portable unit that performs like nothing you've heard. Says one fan *"I think this [R30] is one of those not too well known jewels that is already a precious commodity to those who own one."*



A high quality compact (smaller than an A4 ream of paper) high performance radio capable of receiving multimode signals in the 100Khz to 30 Mhz spectrum. Strong signal handling, high sensitivity and dynamic range to eliminate annoying intermodulation interference. 100 programmable memories, variable rate tuning and switchable bandwidths in all modes.. Equipped with a 10 AA cell internal battery pack that automatically gives portability and endurance away from the mains.

The US made DL2K 2000 Watt dummy load



is fan-cooled and capable of handling 2000 watts. It was born out of the need for more time to tune your amp. Most dummy loads can't handle the real world power load needed by Ham operators. Palstar came up with the DL2K which can handle **2000W for 1.5 minutes**. Aware of over-heating problems found in other dummy loads, the DL2K is fan-cooled to prevent burn-out. One eHam.net user wrote: *"Best high power dummy load on the market today. No other company comes close to building a reliable, safe, high power dummy load."*

The AT1KM Tuner

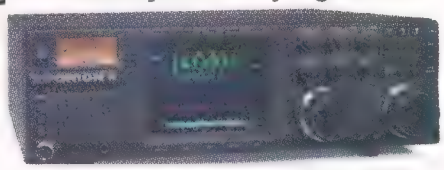
features differential capacitor tuning with 2 stators and 1 rotor. For ease of use, the AT1K series utilize only 2 controls to operate for tuning with a precision ceramic body roller inductor and high power balun. As on all Palstar tuners the front panel and top cover are powdercoated.

Palstar — Performance — Power — Proper Price
Check the reviews on eham.net

TEN-TEC

Read the full specs and reviews on the net and make your own judgement

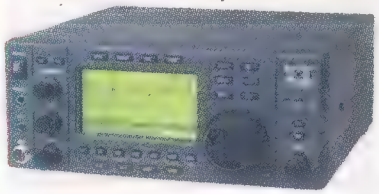
Orion II



First independent test data on ORION II, released 16 April 2006: "Noted receiver guru Rob Sherwood NC0B of Sherwood Engineering now ranks the **ORION II as #1 of all HF amateur radio transceivers ever tested** for close-in dynamic range, dating back to the 1970's. The original ORION is now listed as #2 overall to the ORION II ".

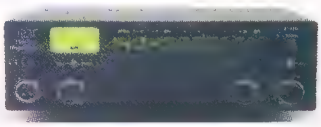
JUPITER

..."I have had TenTec radios for years and not one has been back to the factory. Never had to replace finals. (unlike many other brands named). I have had my Jupiter now for over four years and it works flawlessly. Incredible DSP and filters, firmware is easily updated. Transmitter is clean and it is great to use on all digital modes.

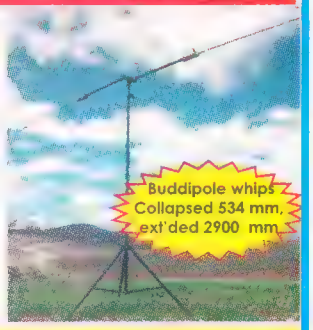


ARGONAUT

"The rig is complete without the need to buy any options or accessories. The rig is not "quirky". Everything works as advertised and as one would expect Although it is firmware-defined, this is not a menu-driven rig. It feels as though I'm operating a ham radio, not interacting with a computer". (WB5GWB on e-ham)



BUDDIPOLE DELUXE



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Latitude in degrees

Negative for south, positive for north

Park AZ and EL

The parking positions for the antenna. The 'Park' switch parks the antenna to this position when in 'Auto' mode.

Switching of the rotator motor(s)

The direction relays operate in pairs. One relay swaps the motor leads (or perhaps the field windings in some cases) to achieve change in direction, while the other applies power. In the case of 'Down' and 'Right' power comes on 50 ms after the first relay fires to enable the first relay contacts to settle. A characteristic 'kerchunk' is heard for these directions due to the double relay action.

Choice of components

The interfaces use DB25 (computer I/O J1), DB9 (Azimuth J2), and DB9 (elevation J3), chosen to avoid accidental confusion of sockets. The LCD is a HD44780 compatible, character based LCD. I used a two line backlit device purchased on VK-Ham, the Plotech 194V-0. Most are 14 or 16 pin devices. Rockby Electronics often have suitable displays. I suggest the following sites for further information regarding LCDs.

http://home.iae.nl/users/pouweha/lcd/lcd.shtml

http://www.repairfaq.org/filipg/LINK/F_Tech_LCD.html

The rear box photo shows the eight connectors for rotator power/ground and motor leads. Two are unused and were a 'just in case' for the prototype. By mounting the connector strip on a small L shaped bracket I was able to provide a convenient feed-through from the inside and solid connections for the motor leads.

You may choose to use fuse holders for the motor power and for the main 12 V power supply. Next time, I probably will. Not shown in the circuit diagram is a diode wired in series between the +12 V and the switch to guard against accidental reversal of power.

The prototype's front panel direction switches are spring loaded SPST push buttons. All other switches need only be SPST.

The choice of a 16F628 or a 16F628A in the AZ/EL board doesn't matter; just remember that the programmer for the PIC must be set accordingly as the two varieties use slightly different programmer timings. The crystals in all cases determine critical timings, no substitution of frequency is allowed.

General construction

I have a stock of boards. Check my website for details. All boards are of a double sided, plated through holes, silk screened design. Someone else might like to convert this to a single sided design if they have the 'know-how' and the time. The project design is copyright and no portion may be commercially manufactured without my permission.

The photos illustrate major construction methods but there is nothing very critical in layout terms. Just use sound amateur design, avoid overheating components and socket your chips. Note that, if required, the encoder board and AZ/EL board will fasten together in 'piggy back' fashion provided that appropriate connectors and standoffs are used. The connector, if used, mounts on the back of the encoder board.

Depending on the LCD choice, you may need to run the backlight from +12 V via a resistor R14; adjust for best results around 100 ohms. Some backlit LCDs have resistors on board that enable 5 volt operation from the normal +5 V to the unit, in which case omit R14. Use J8 if the backlight needs +5 V on pins 15/16. If you choose to run the backlight from the +5 V voltage regulator, you will need to heat sink the LM7805 or even mount it externally. If necessary, adjust your LCD connections to match those in the circuit diagram.

All switches are active when earthed, so a common earth lead can be run to these. The active sides of S1, S2 on the board are nearest the LCD plug. The active side of S3 is away from RV1. DO NOT use the second S3 pin nearest RV1, it mistakenly goes to +5 V instead of 0V - take the S3 earth from another switch.

Relay 2 is the power switching relay for Up/Down while Relay 1 is the direction relay for Up/Down.

Relay 4 is the power switching relay for Left/Right and Relay 3 is the direction relay for Left/Right.

Relay 5 is the brake relay.

LEDs

L1 LED indicates down (cathode nearest board corner)

L2 LED indicates up (anode nearest board corner)

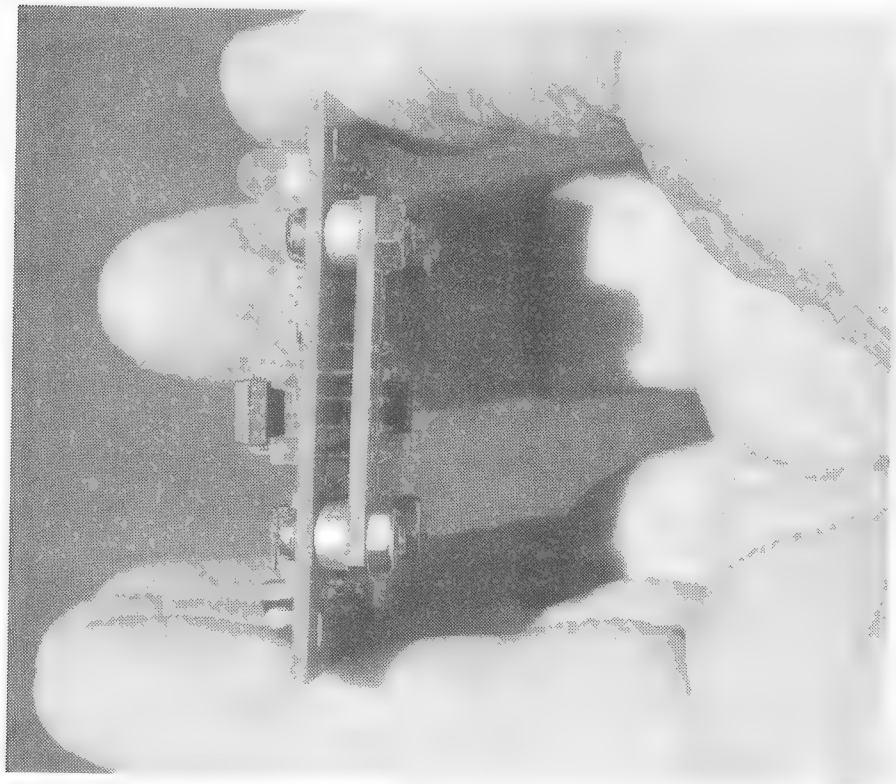

Photo 5: Edge view of double sensor

L3 LED indicates left (anode nearest board corner)

L4 LED indicates right (cathode nearest board corner)

The MAX232 (IC3) is mandatory. However the second MAX232 (IC4) was designed into the board as a precaution. It has been found that 9600 baud works quite well over 100 metres of CAT 5 cable to the antenna units, but in the unlikely event there are problems, there is provision to use -10 V to +10 V levels by installing the second MAX232 chip. Note that if this chip is used, it will be necessary to create another board at the antenna unit for a matching MAX232. Probably one board could service both AZ and El sender units, as the MAX232 is a dual channel device. The MAX232 chips must always work in pairs or the data direction will be inverted and communication will not be possible.

Most users will not install IC4 and should therefore install two bridges joining pins 12/13 of IC4 and pins 8/9 of IC4. Capacitors C12, C13, C14, and C15 should be omitted.

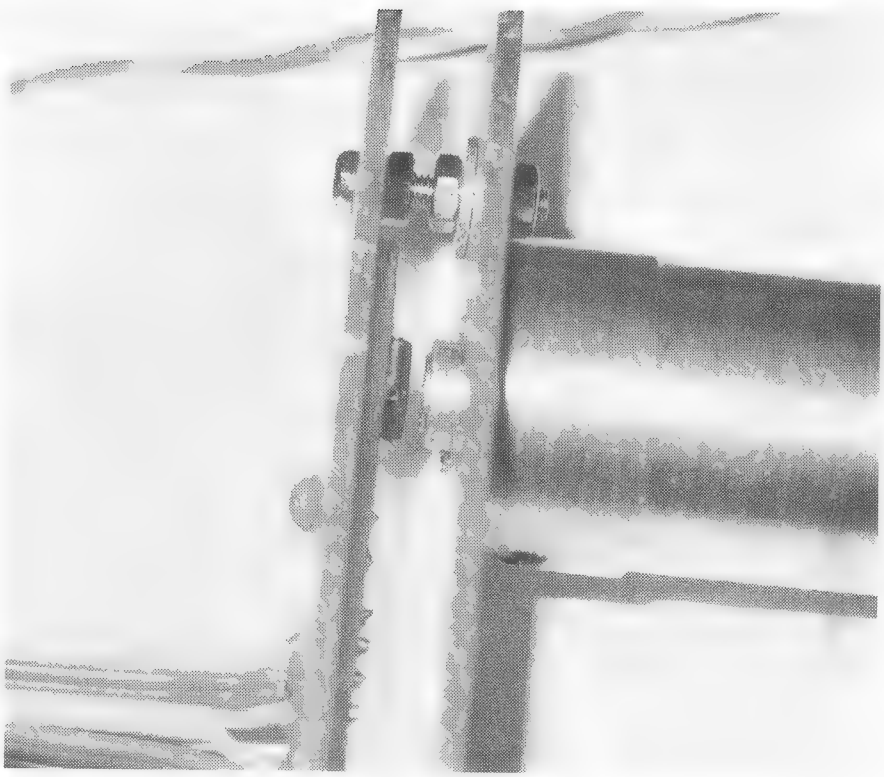

Photo 6: Magnet mounted on shaft

Adjusting the encoder unit and magnet distances

The encoder board has a small hole in the centre. Before soldering the AS5040/45 into position, the location of the encoder board may be determined initially by sighting through the hole to a centre mark on the magnet. This hole is also at the physical centre of the board as referenced to the four mounting holes. Once the board has been centred using the sighting hole, the mounting holes can be marked and drilled slightly oversize to allow for some final adjustment.

When the unit is complete and power applied, the distance between the AS5040 and the magnet should be adjusted in the centre of the range where LEDs L3 and L4 are NOT on. The LEDs are out when the magnetic flux is within tolerance. In my case this is about 1.5 to 2.0 mm with the recommended magnet.

Once the AZ/EL unit is plugged into the Azimuth DB9 on the shack unit and providing a reading, put SW3 into the ON position and rotate the magnet. It should be possible to adjust the position of the AS5040 by moving the board to a point where the maximum difference in the readings is 30 or better. This indicates optimum positioning. LEDs 3 and 4 will also light for 360 degrees at this point. If you cannot achieve the less than 30 difference, just make it as good as you can. There seems to be a reasonable tolerance to misalignment but there will be some nonlinearity across the 360 degree rotation.

Programming the PICs

The HEX files are available from my website. Note that the hex files differ depending on whether an AS5040 or an AS5045 is used.

Initial test setup

Step 1:

Initially install two 10 k pots (ideally linear but for the test it doesn't matter) on flying leads to DB9 plugs for the azimuth and elevation ports. Pin 4 (+5 V) and 5 (earth) to the outer connections of the pot and Pin 8 to the wiper.

Step 2:

Ensure the auto/manual switch is on 'Auto'. Hold the 'UP' switch on until the 'secs' display appears. You are now in the configuration menu.

Step 3:

Use the 'Up' or 'Down' buttons to locate the item 'AZ/EL mode'. Use the 'Right' or 'Left' button to increase or decrease the value to 3. Press the 'Up' button and a message 'Memory updated' appears, you may now reset the auto/manual switch to the manual position to exit the menu system.

Step 4:

Adjustment of the pots will result in changed readings on the LCD.

Step 5:

If you have an AS5040/45 unit ready you could repeat steps (1), (2) and (3) but this time set AZ/EL mode to 7. Now plug the serial device into the azimuth port and again you should have readout, but this time azimuth will be driven by the AS5040/45 system and elevation by the potentiometer.

If you are using a rotator and a pre-existing resistive element some experimentation will be necessary to find the right solution. For example, if your rotator uses a rheostat rather than a potentiometer you will need to convert it to the latter by earthing the open end; alternatively install a potentiometer.

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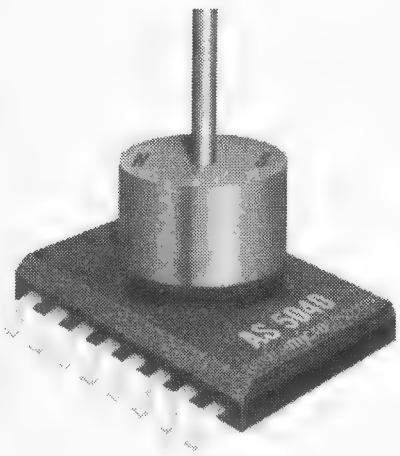

Photo 7: The AS5040 encoder chip

Socket connections

Pin of J1	Pin of DB25 to computer
1 9600 baud IN from comp	2
2 9600 baud OUT to comp	3
3 CTS to computer	5
4 DTR from computer	20
5 Earth	7

Pin of J2 (Azimuth) and J3 (Elevation)	Pin of AZ DB9 and EL DB9
1 +12 V to antenna unit VR	1
2 Handshake out to ant unit	7
3 9600 baud data IN	3
4 Wiper of pot in	8 if used
5 +5 V to top of pot	4 if used
6 Earth	5

J6 switches (earth to activate)

1 manual/auto operation (near pin 26 of PIC)
2 right direction
3 left direction
4 up direction
5 down direction
6 brake
7 earth (near pin 32 of PIC)
S1 Moon off/Sun on
S2 Calculations internal on/external off
S3 Calibrate function to be added
J8 5 volt back light
Install jumper if running back light from +5 V, do not install R14.
Omit jumper if running from +12 V via R14.

A word on accuracy

Tracking programs for the moon involve many variables and are quite complex. There are, for example, over fifty orbital corrections considered in calculating the longitude of the moon and a similar number for the right ascension. Don't expect a guaranteed accuracy much better than +/-0.1 degree for the moon from most programs, including the one in this project. The number of digits displayed after the decimal place by a program is often no indication of accuracy. I use AA.EXE as my standard for checking moon/sun calculations – it is available from http://www.moshier.net/aadoc.html and claims an accuracy of 0.5 arc second as checked against the Astronomical Almanac.

The position of the sun is relatively easily calculated. The program in this project is accurate to better than 0.1 degree and so should be used for the alignment of antennas.

Encoders, whether magnetic or optical, all have errors and are susceptible to temperature and/or transition point issues. The topic of measurements and mechanical limitations of pointing large antenna systems warrants another article in itself. This project won't put Parkes in your backyard but, hopefully, will aid many in improving their tracking to better than 0.5 degree at reasonable cost.

Summary

The construction allows various sensors to be used. US Digital manufacture an encoder in a pot style case (MA2-A) that should work directly in the pot mode but I haven't had a sample to try. I plan to modify the antenna unit to interface the PWM model MA2-P when I get a sample. Both US Digital solutions provide a 'pot like' mounting solution.

I would like to thank Russell Lemke VK3ZQB for his work in turning my pencil drawings into professional looking circuit diagrams yet again and also developing the board layouts. Without him it would not have been the same quality project. Also thanks to Doug VK3UM, who is in the process of linking the project to his well respected EME tracking software.

I am happy to answer any questions via email but firstly please check my website for any documentation updates.

ar

Yaesu FT-2000 HF – 6 m transceiver

Ron Fisher VK3OM and Bill Roper VK3BR

The much anticipated FT-2000 is the replacement for the FT-1000 series of transceivers. The FT-1000 and the FT-1000 MP have previously been reviewed in Amateur Radio. This transceiver is a worthy successor.

Over the seventeen years that the FT-1000 series was in production, significant changes have taken place in the design of the transceivers, not only in weight and size, but also in the change in technology from analogue (FT-1000) to digital (FT-1000 MP with audio Digital Signal Processing progressing on to the FT-1000 MP Mark-V with many more digital features including enhanced DSP).

As readers will appreciate, in the space available in Amateur Radio for this review, we are not able to fully review this complex transceiver, complete with measurements of all its technical capabilities. We have found from past experience that modern transceivers from the major manufacturers easily meet, if not exceed, their published specifications. Therefore, this review is a brief overview of the capabilities of the FT-2000 when used at a typical amateur location. We also thought it was beneficial for readers to have the review done by two active radio amateurs with somewhat different points of view. Although the reviewers mainly looked at the SSB capabilities of this transceiver, we have no doubt that the CW (built-in electronic keyer, full break-in, etc), AM, FM, RTTY and packet capabilities of the FT-2000 live up to specifications. If any readers buy, or have bought, an FT-2000, and have any differing views to those expressed here by the reviewers, we would be very pleased to hear from you.

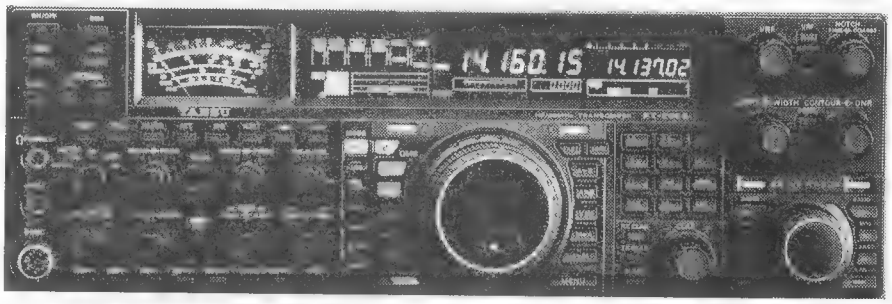

Photo 1- Front panel of the FT-2000 transceiver

What does it do?

The FT 2000 is a very capable HF and 6 metre 100 watt output transceiver. It includes two general coverage receivers, a built-in switched-mode power supply, IF DSP for receiver bandwidth selection in the main receiver and analogue filters in the second receiver. Also, DSP filtering provides noise reduction and automatic notch filtering. All amateur bands are provided from 160 m to 6 m, and the receivers cover from 30 kHz to 60 MHz. This is the first time that 6 m has been included in the FT-1000/2000 series of transceivers. The 6 m transmit power is 100 W.

The default SSB bandwidth is 300-2700 Hz, adjustable up to 3000 Hz. As well, there is a three band transmit audio equaliser, with a multiplicity of settings, and different settings for when using the speech processor. As usual, there is an automatic antenna tuner with its own memory system which compensates for an SWR of up to 3:1. You can select two antenna connections, for example one for HF and one for 6 m, plus a receive antenna input which could be used, say, as a separate receive antenna input for 160 m or simply for short-wave broadcast listening.

For the CW operator there is semi or full break-in and a built-in memory keyer, plus a different set of DSP receive filters. However, in the second receiver, a 1000 Hz analogue filter is standard for narrow CW with an option to fit a 500 Hz or 300 Hz Collins mechanical filter.

Infrequently needed adjustments and configuration settings are handled by the 147 menus which make it easy to set up the parameters you want for a particular operating mode. The menus for each function are grouped together to make for easier access.

A feature of the FT-2000 configuration is that, while it has a built-in ac power supply, it can be unplugged from a connector on the rear and 13.8 V dc can be connected directly to allow operation in the field when ac is not available. It is noted that Yaesu have changed the dc input connector from a standard 6-pin plug to a new 4-pin plug. No dc connector is offered as an option. Perhaps Yaesu may consider providing a 4-pin plug with the transceiver.

First impressions

Both reviewers of the FT-2000 are happy owners of the original FT-1000D, and have used, at one time or another, all of the subsequent FT-1000 series of transceivers.

The first thing noticed when removing the FT-2000 from its strong packing carton is that it only weighs 15 kg, the same as the FT-1000 MP but 10.5 kg lighter than the FT-1000. This is due mainly to the change to the inherently lighter-weight, switched-mode power supply.

The FT-2000 is similar in size to the FT-1000 MP Mark-V at 410 mm wide by 135 mm high and 350 mm deep. First impressions are the large, multi-coloured, analogue S meter; the large heavily weighted main receiver tuning knob (2 cm larger diameter than the knob on the FT-1000); and the bright, multi-

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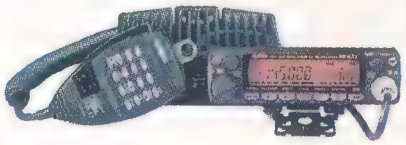

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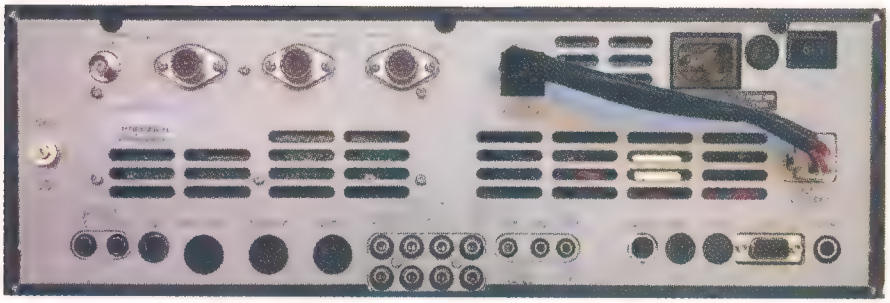

Photo 3 – Rear panel of the FT-2000.

coloured main display which includes a "block diagram" of the receiver front end, showing the antenna, attenuator, pre-selector, pre-amp, roofing filter and AGC settings in use. The display also shows the settings for DSP contour, notch, IF width and IF shift. These features of the main display give a quick and clear visual indication of receive parameters.

It is noted that one of the major features of the FT-1000 MP series, the shuttle-jog tuning control, which was concentric with the main tuning control and provided rapid up and down tuning, is missing. The ring at the rear of the main tuning control now adjusts the knob tension.

The multiplicity of knobs (26) and switches (77) on the front panel are all well spaced and easily operated, even with large clumsy fingers. It is noticed that, unlike the FT-1000 MP Mark-V, many of the controls are not illuminated when in use. Also, unlike all of the previous transceivers in the series which used white lettering, the labelling of the controls on the FT-2000 is in a silvery grey lettering which makes the labels harder to read.

The FT-2000 on the air

As would be expected for such a complex transceiver, when the FT-2000 is first switched on and about to be used, it can appear rather daunting to the newcomer. Because the reviewers are familiar with the FT-1000 series of transceivers, both were able to get the FT-2000 up and running and have initial contacts on-air without recourse to the manual.

However, it is from here that the fun starts. The reviewers both had entirely different first impressions of the FT-2000. One reviewer transmitted using the transceiver's default settings on the transmit audio equaliser and the other reviewer was not very complimentary about the received muffled audio. So the battle began with the audio equaliser and the transmit settings. There are literally thousands of possible combinations. The reviewers' experience indicates that it could take weeks of experimentation to arrive at the best possible settings to suit your voice and microphone. However, do not be deterred.

After much reading of the manual, and much on air and off air testing, the first reviewer finally achieved an acceptable result. However, when the positions were reversed, much more adjustment was required. Using an MD-1 Yaesu desk microphone (the eight-pin connector is compatible with earlier Yaesu microphones), the settings we finally arrived at with the speech processor not activated were as follows: menu 123, 100 Hz; 124, 10 dB; 125, 1 bandwidth; 126, 1000 Hz; 127, 0 dB; 128, 6 bandwidth; 129, 2400 Hz; 130, 10 dB; and 131, 1 bandwidth. With

Photo 2 - The main receiver part of the bright, multi-coloured main display which includes a "block diagram" of the receiver front end, showing the antenna, attenuator, pre-selector, pre-amp, roofing filter and AGC settings in use.

TVI High Pass Filter with Braid Breaker.

An inline TVI filter with Braid Breaker.

A large amount of TVI can travel down the outer braid of Coax as well as the centre conductor. The braid breaker isolates the centre conductor and braid from the TV/VCR/DVD. The High Pass filter cuts in at 50MHz. This filter has –80dBm attenuation at 40, 80 and 160 Metres.

Pager Notch Filter:

A receive filter that can be used in an outdoor housing (Pictured) to be mounted close to your antenna on the mast, or can be used in a diecast box for indoor use near your transceiver or receiver. The filter is set to 148.5 MHz but may be tuned by the user across the 148 to 149 MHz Pager band. A selection of connectors are available including BNC and N Type. Where transmit is required this filter can be switched out of circuit by the use of coaxial relays linked to the PTT switch.

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the speech processor on, we found the following settings worked for us: menu 132, 200 Hz; 133, -10 dB; 134, 2 bandwidth; 135, 800 Hz; 136, -3 dB; 137, 1 bandwidth; 138, 1800 Hz; 139, 0 dB; and 140, 1 bandwidth.

The setting of the transmit audio can certainly be complex. The settings we arrived at are very much a matter of personal opinion and depend upon many variables, including your voice, the microphone and the listener's receiver, hearing and expectations. You can, of course, do much of the adjustment running the FT-2000 into a dummy load and listening on another receiver, or by listening on the FT-2000's transmit monitor facility, in which case a pair of good quality headphones with good acoustic isolation are essential.

After some thought, we decided to do a frequency response test by feeding an audio oscillator into the microphone input and measuring the transmit power output. This is a simple procedure that requires equipment found in many amateur shacks. We decided to check at the final settings that we had set the equaliser to, and then at the transceiver's default setting. The difference is quite amazing. In both cases, 1000 Hz was taken as the reference.

At our final settings we measured: at 80 Hz, -2.5 dB; 120 Hz, +6 dB; 200 Hz, +2 dB: 300 Hz, -2.5 dB; 500 Hz, -2.5dB; 1000 Hz, 0 dB; 1.5 kHz, +6 dB; 2 kHz, +8 dB; 2.5 kHz, + 12 dB; 3 kHz, - 2dB; and at 3.5k Hz, -25 dB.

At the default settings, which you will note are much narrower, we measured: at 150 Hz, -25 dB; 200 Hz, -20 dB; 250 Hz, -12 dB; 300 Hz, -7 dB; 400 Hz, -1 dB; 500 Hz, 0 dB; 1 kHz, 0 dB; 2 kHz, +2 dB; 2.5 kHz, 0 dB; and at 3 kHz, -25dB.

Who says that "black box" operation obviates the user from experimentation and testing? When properly adjusted, the speech processor (whose level is adjustable from the front panel) gives a worthwhile boost to the signal. Reports on the transmitted signal indicate that the suppressed sideband was well down (the specification is for at least 60 dB below peak output), further than with many other signals on the band.

The VOX works smoothly and all controls are on the front panel.

Both reviewers agreed that it was great to see a return of an analogue meter, although the S meter for the second receiver is an LED bar graph. As well as acting as an S meter for the main receiver the analogue meter allows monitoring of power out, speech compressor level, ALC level, SWR, final amplifier voltage and final amplifier current.

Incidentally, the FT-2000 uses a pair of MOSFETs in push-pull in the final amplifier running from 13.8 volts. The power output is adjustable from 5 W to 100 W (2 W to 50 W using AM). The thermostatically-controlled cooling fan features five speeds and is very quiet in operation.

The inbuilt antenna tuning unit uses a stepper motor and has 100 memories. It is quite fast in operation.

The FT-2000 also includes a handy 15 second Digital Voice Recorder facility to record incoming signals. There is also a four-channel message memory of 20 seconds per channel for recording repetitive voice messages.

Receiving

Let us now look at the main receiver of the FT-2000, and its many facilities to improve reception. First of all, note that one reviewer was not all that impressed with the quality of audio recovery of SSB and AM signals, whilst the other reviewer was quite pleased.

The first reviewer believes that, although the transmitted SSB signal is capable of producing relatively high quality audio, the receiver audio quality seems very restricted regardless of bandwidth settings. His tests with a signal generator fed with an audio oscillator showed that the top receive response for both SSB and AM was very little in excess of 2 kHz. He would have preferred a wider audio bandwidth. The second reviewer was quite satisfied with the SSB response.

The main receiver is triple conversion with a first IF at 69.450 MHz; the second receiver is double conversion with the first IF at 40.455 MHz. The final IF frequency of the main receiver is at 30 kHz utilising 32-bit floating point DSP.

General sensitivity (SSB rated at 0.2 µV on HF and 0.125 µV on 6 m) and signal-to-noise ratio of the main receiver are excellent. Image rejection is quoted at 70 dB or better from 160 to 10 m, and 60 dB or better on 6 m.

Amateur band frequency changing is accomplished by pressing the required button on the group just to the right of the main tuning knob. In addition to a 100 memory capability, plus handy and colourful Quick Memory Bank buttons (five quick memories) close to the main tuning knob, a useful feature is the triple band stacking register. This means that each amateur band frequency selection button can select the last three frequencies when repeatedly pressed.

One interesting effect we noticed, that is as yet unexplained, is that when you change from upper sideband to lower sideband, or vice versa, the frequency display will change by 1.4 kHz. Thinking that there was a fault, or perhaps an incorrectly set menu item, we asked Vertex Standard about this effect. They replied that this was normal. However, they could give no reason. It seems the

Photo 4 – MD-200 microphone.

Yaesu top-of-the-line FTDX9000 family of transceivers do a similar thing except that the frequency change is 900 Hz. If we can find out why, we will let you know.

The SSB receive bandwidth is adjustable using the WIDTH control from 200 Hz to 4 kHz. On SSB the narrow (NAR) button brings in a default 1.8 kHz (menu settable from 200 Hz to 2200 Hz) bandwidth which disables the WIDTH control, but not the SHIFT or CONTOUR controls. A similar effect to the NAR button can be obtained by counter-clockwise rotating the WIDTH control.

When using the WIDTH control, it is almost essential to follow it with the SHIFT control to keep the audio response balanced.

The FT-2000 has a manual notch filter that provides a depth of more than 60 dB and is very effective in all modes. The digital notch filter (DNF) automatically notches out multiple interfering tones in the passband, but its effectiveness is reduced with noise or signals in the passband.

The CONTOUR control alters the shape of the IF filter passband to either enhance or suppress particular frequencies to improve the sound of a received signal.

The DNR (Digital Noise Reduction) control works well and really helps to read signals through the noise. The further clockwise you turn the control the more noise reduction takes place. However, it can take a substantial part of a second before the new setting acts, so don't think it is not working. Just be patient as you search for the optimum setting.

The FT-2000 includes three selectable roofing filters at 3, 6 and 15 kHz bandwidth allowing early bandwidth selection and help in reducing adjacent signal interference when receiving in a crowded band.

The NB (Noise Blanker) control is quite effective on impulse noise, and the level of blanking can be set via a NB potentiometer which is concentric with the SQUELCH control.

Three levels of AGC (Fast, Medium and Slow) are front panel selectable, and the delay and hold characteristics are menu selectable over a wide range. Again the reviewers differed on the settings.

Another useful receiver feature is VRF (variable RF pre-selector) which shifts the front end selectivity to reject strong off-frequency signals. This is quite effective in use.

The IPO feature enables either selecting bypassing the RF pre-amplifier to feed the received signal direct to the first mixer, or adding 10 dB or 17 dB low distortion pre-amplifiers. The ATT (attenuator) control is either off, or provides 6, 12 or 18 dB attenuation (what a pity that modern transceivers do not go the extra step and provide a 24 dB level of attenuation as well).

The second receiver, unlike the main receiver, is not DSP but analogue. In operation, the reviewers found it much easier and better to operate than the second receiver on any of the previous FT-1000 models, particularly because it has its own separate RF and AF gain controls. Using headphones you can have the audio from each receiver in separate ears.

No doubt because of the inclusion of 6 m capability, the FT-2000 has provision for full FM operation, including CTCSS tone generation and decode capabilities, as well as automatic receiver offset for 6 and 10 m FM operation. The FT-2000 also has an output at 10 dBm for transverter operation on the higher bands.

As with the previous FT-1000 series transceivers, the FT-2000 has a 4-pin DIN socket on the rear panel for RTTY FSK operation. Also, there is a 5-pin DIN socket on the rear panel to accept AFSK packet input.

Operating Manual

The 128-page manual that comes with the FT-2000 is well presented, and is quite suitable for the newcomer or the experienced radio amateur. It has a solid cover which should survive much handling.

As always with such a complex radio, we strongly suggest that the new owner settle down to reading the manual from cover to cover before first switching on the FT-2000. Even for the very experienced operator, the manual is a 'must read' if you want to get the best out of this transceiver.

MD-200a8x microphone

The reviewers were also supplied with this desk-top deluxe microphone. This very expensive unit has provision for two inserts but comes with one. This means that you can, for instance, add your favourite Heil DX microphone insert at a later date.

The frequency response of the insert is adjustable from flat to accentuation of the high frequencies over a 180 degree turn of the adjustment wheel.

It is a large microphone with a retro appearance reminiscent of a 1940's style broadcast studio microphone. Both reviewers used this microphone for a time with the FT-2000 with good results.

Conclusion

Both reviewers agree that this FT-2000 transceiver is a worthy successor to the FT-1000 series of transceivers, and fully and successfully makes use of current DSP technology.

Vertex Standard Australia stated that updated firmware for the transceiver is not available for download from the web and user installation. A search of the web would seem to indicate that some amateurs in other countries have downloaded and installed new firmware. Let's hope that as Yaesu updates the firmware for the FT-2000, and no doubt this will happen as the transceiver continues to be developed, they find a way for users to download and install the new firmware themselves.

The list price for the FT-2000 is $3,988, but is available from some dealers at a considerably lower price. If you are going to buy one, shop around! The MD-200 is listed at $622.

Optional extras for the FT-2000, some of which are not yet available in Australia, include the SB-2000 external speaker with audio filters; the DMU-2000 data management unit to generate video displays (requires external computer monitor and keyboard, and provides audio scope, oscilloscope, spectrum scope, logging and rotator control capabilities); and the μ-tuning high-Q narrow bandwidth pre-selectors (the average Australian user of the FT-2000 most likely will not require these expensive options).

The review transceiver and microphone were kindly made available by Vertex Standard Australia Pty Ltd. Our thanks to Yoshi and his team.

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International Lighthouse/Lightship Weekend

Kevin Mulcahy VK2CE

It all started in 1994 during a wet wintry evening when two members of the Ayr Amateur Radio Group in Scotland, John GM4OOU and Mike GM4SUC (now SK), after a club meeting were talking about creating an event in the summer when club members could get out on a sunny weekend and play radio. Various themes were considered; ports, airports, historic Scotland sites, the Firths of Scotland, castles, etc., but it was finally decided that lighthouses of Scotland would be ideal.

Following research, it was discovered that the lighthouses of Scotland were controlled by the Northern Lighthouse Board in Edinburgh, who were not only responsible for the lighthouses of Scotland, but also around the Isle of Man. Approval was sought and obtained from the Northern Lighthouse Board to establish amateur radio stations adjacent to their property. In February 1995, an invitation was sent to all Scottish clubs and the Isle of Man club to join in the fun of a weekend, to be called the Northern Lighthouse Activity Weekend, by establishing an amateur radio station at a lighthouse during the third weekend in August. This first year's event saw 11 stations established at lighthouses, operating primarily on the HF bands, with each station making approximately 750 QSOs over the weekend.

The following year, the Scottish clubs were involved in a weekend activity with the theme of Scottish Firths (river estuaries), so two years elapsed before the next Northern Lighthouse Activity Weekend. During this period, Anne-Grete OZ3AE enquired through a letter to Practical Wireless if there was any lighthouse activity on amateur radio. Following discussions with her, it was decided that Danish stations could join in the fun of the weekend. Quickly Germany, South Africa and France asked to join, so the name of the weekend was changed to The International Lighthouse/ Lightship Weekend in 1999. It was at this time that John GM4OOU, due to pressure of work, had to cease his connections with the event.

The weekend became an annual event taking place over the third full weekend in August. The event has slowly grown in popularity. In 1999, there were 204 lighthouse/lightship stations in 36 countries. By 2006 there were 377 stations in 48 countries that took part. Full statistics and guidelines for participation can be found on the ILLW web site at http://illw.net/ which is funded and maintained by the author.

The main reason the event has become so popular is because it is NOT a contest. It is a relaxed fun weekend without the pressure of a contest. The guidelines are simple and the onus is on the operators to act within the spirit of the weekend which is simply to expose amateur radio and the plight of lighthouses to the public. This is why it is important for the ham station to be as close to the lighthouse/lightship as possible and with the controlling body's approval.

In Australia, it can be very difficult to obtain permission, as it is not an easy matter to find out who actually controls and maintains the lighthouse. The Australian Maritime Safety Authority used to control all lighthouses but they have relinquished most to the Parks and Wildlife Services in each State. Some lights are managed by local councils, some by Port Authorities and some are totally off limits.

A few years ago the International Association of Lighthouse Keepers decided to have an annual open day for lighthouses all around the world to encourage visitors to look at their lighthouses. They decided that no better day could be decided upon other than the Sunday of the ILLW. This move has been highly successful, as the media have become involved in quite a few areas on our East coast as well as in other countries.

I first entered the event in 1999 and was one of only four Australian entrants. This seemed to me to be ridiculous considering the number of lighthouses in this country, so I decided to do something about it and asked Mike Dalrymple GM4SUC, the organiser, if I could organise some PR here and in New Zealand. He appointed me the Oceania co-ordinator for the event and last year we had 30 entries from VK. In 2001, I took over the entrants list from Jim Weidner, the President of the Amateur Radio Lighthouse Society, based in USA, and set up the web site as it is today. Last year the entrants list clocked up over 12,000 hits.

This year's event takes place on 18-19 August 2007, so if you haven't done so already, find a lighthouse nearby and get a group together or do it solo and fire up a lighthouse station. In most cases, if you don't intend operating from within the lighthouse itself or one of its cottages, you really don't need to get any approval. The Parks and Wildlife people used to be quite difficult but word has now circulated that we are fairly harmless and the PR generated is good for them as well. At Green Cape, they have even provided a caravan as a radio shack and they even tow it from Merimbula, some 60 km away.

Everyone I know who has participated in the event for the first time has come back year after year. A report from the Burlington ARC, Canada, summed their first participation in these few words:

"The greatest delight of the day was the active participation of the visiting children who showed a remarkable interest in the whole idea of amateur radio, especially the use of Morse Code. It was an honour and a delight to participate in this adventure and we look forward with increased enthusiasm to next year's participation."

As you can see from the website, Mike Dalrymple passed away in December 2005. He was the Treasurer of the Ayr ARG and one of their members has taken on Mike's roll as the PR man and main co-ordinator. The event is now dedicated to Mike's memory.

I am happy to answer any questions anyone might have about the event. My email address is vk2ce@vk2ce.com

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The way we were

Steve VK5AIM

Thinking back on the day of my 73rd birthday I thought of all the changes that have occurred in Wireless, as it was called in my youth.

I can just remember the little mantel wireless that my parents had. I probably became aware of it by about 1936/37. Later in life I was told that it was purchased from Ernsmith and Co's shop in Adelaide. The sales person was to become a well known Adelaide radio announcer.

The set must have been a regenerative circuit as I can remember my mother being annoyed when my father retuned the set and made it howl! My parents and visitors would sit around listening to radio serials and plays. The music and sounds fascinated me more than the stories. I was a little bit frightened by the "creepy" music and disturbed by the "sad" sounding music. The declaration of WWII was heard in silence, with a lot of talking afterwards. We heard good, bad and other news of WWII and later of VP and VE Day on the little wireless

It was not until 1945, as a teenager, that I became interested in wireless and built my first crystal set. By now I was allowed to tune the little wireless. From reading the popular *Radio and Hobbies* magazine, I learned that the set would receive better with an external aerial and earth. A long aerial was strung from a post at the bottom of the backyard to a mast mounted on the chimney. We earthed it to the water pipe mindful of the warnings about not using the gas pipe. The improved reception was amazing. I will never know how much interference I generated when I let the set go into regeneration! As many of the Broadcast stations closed down at midnight, Friday and Saturday were good nights to do some BC DX listening. Stations from all over Australia and even further could be heard with careful tuning and adjustment. With station locations and call signs obtained from lists in *Radio and Hobbies*, it became quite a challenge listening and logging.

Once I was an apprentice and had skills with tools and money of my own, I was keen to build my own wireless. An electric soldering iron and a VOM, the predecessor of the multimeter, were the first pieces of equipment I bought. My start in "home brew" radio.

From reading *Radio and Hobbies*, I learned of short waves and amateur radio! I persuaded my Mum, who was the one who encouraged me with my electrical and wireless studies and activities, to buy a floor standing wireless from a local radio and electrical shop. It had broadcast and two short wave band coverage, pickup terminals and a large loudspeaker. It was, of course, a superhet receiver. With the long aerial and the earth attached, it opened up a new world to me. I was then allowed to dismantle the little old mantle set for bits and pieces to build my own radio. It was indeed a regenerative circuit, known as Two and a Rect. An RF pentode, a 57 valve as a detector, a 45 OP pentode and an 80 rectifier. I salvaged the tuning condenser along with the little reaction condenser. The speaker was of the electrodynamic type with the field coil being the filter choke of the DC power section and of no use to me. I decided to build a basic battery powered set from the *Radio and Hobbies* magazine. It was called "Little Jim", a one valve regenerative set using the 19 twin triode. The name "Little Jim" appealed to me as my second name is Jim! One section served as a regenerative detector, the other half as an audio output stage. Thus began a life long interest in radio and hobbies that became my profession and hobby started.

Parts were bought from the Gerard and Goodmans shop on Rundle Street Adelaide. With high school wood and metal working skills, a wooden cabinet and an aluminium chassis was made. The result was a neat little radio.

A few minor problems were soon sorted out, unwanted feedback with the regenerative circuit and I had my own radio that I had proudly built myself.

Thinking back it seems a long time ago!

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WIA news *continued*

cordless phone and $30 per month of Freshtel call credit.

Country Energy have been "trialling" BPL in Queanbeyan for several years using the older generation 45Mb/s DS2 chipset based Mitsubitishi equipment, producing emission levels measured up to 55 dB above the expected ambient noise levels on the 7 MHz amateur band. This new trial will use Schneider Electric (Ilevo) equipment using the later generation 200 Mb/s chipset, as used in the Mt Beauty BPL trial.

Richard Fidler interviews Ken McCracken VK2CAX

On 26 March 2007 on ABC 702 Sydney, Richard Fidler interviewed Ken McCracken VK2CAX about his involvement in the early space program. Ken mentioned amateur radio several times, and how it contributed to his career.

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Editorial *continued*

the outcomes are usually better for all (as opposed to some) in the workplace. If a collective agreement can be achieved, the beneficial outcomes apply to all at the workplace. The same applies in this hobby – the benefits of the negotiations between the WIA and the ACMA apply to all amateurs. However, it is only the members that contribute to the costs of achieving those outcomes. This is hardly equitable, in the Australian sense of sharing and mateship. Are you a member and contributing YOUR share? Or are you on the outside, often sniping about "what should be done" and not contributing in any constructive manner? For most readers, the answer to the first question will be "yes". What about your amateur friends? Remember, there is strength in numbers – the larger the proportion of Australian amateurs that are members of the WIA, the more powerful is its voice.

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YL Meet in India

Gwen Tilson VK3DYL

I recently returned from India after attending the 8th International YL Meeting, held in Mumbai. The meeting went off very well under the direction of Sarla VU2SWS, and I am now trying to sort out my impressions of the trip.

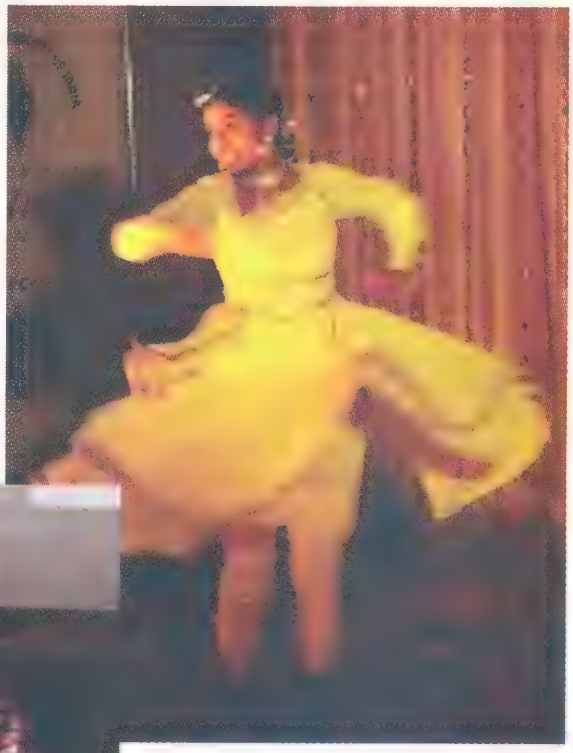
Shortly after arriving in Mumbai, I joined my Norwegian YL friends, Unni and Ingrid, on the back seat (actually only meant for 2 people) of a tuk-tuk to go shopping. Everyone should have the experience at least once in their lifetime of riding in a tuk-tuk, best described as a 3-wheeled vehicle with a loud (and I mean loud) horn driven by a madman who thinks he owns the road. There must be thousands of tuk-tuks in India, all converging at the same spot at the same time. Alternatively you can travel by rickshaw pulled by man or beast, though personally I preferred hiring a car and a driver with good reflexes, a loud horn and a heavy foot on the brake.

Beggars – very persistent in trying to sell you things you don't want. Some even employed monkeys to cling to a car window in the hope passengers would open it so the monkeys could reach inside and help themselves to cameras or purses.

Street stalls selling everything from fruit and vegetables to blocks of marble. Pharmacies and doctors operating from "hole in the wall" shops. Slum areas worse than I'd seen in Bangkok or anywhere. In Mumbai, we saw a Dhobi Ghat, a square ½ kilometre of cement stalls where washermen pound garments to what seems like pulp to get them clean, employing about 10,000 people to wash, dry, iron and deliver the cleaned clothes – what a sight looking down from an overhead bridge on all this activity as rows of racks flutter with drying laundry.

Lots of temples and ruins of once-great palaces. All with many steps to climb in the heat! The first sight of the Taj Mahal, described as the most extravagant monument ever built for love and which has become India's de facto tourist emblem, was all I wanted it to be – well, except for those innumerable steps and the fact that I had decided, in advance, to see it at sunset when the inside was so dark that one couldn't see all the beautiful intricate marble carving! However, next day I was taken to a marble workshop where I saw how the marble was quarried, cut and inlaid with precious stones from all round the world. How I would have loved to buy one of those tabletops but, having bought a carpet in Varanasi (and which I had to carry home!), I decided "no way!".

Varanasi – I had seen many pictures of people bathing in the Ganges and wanted to see it for myself, so early one morning a YL guide collected me and we travelled by boat up and down the river past the Ghats where literally hundreds of people were already congregating to bathe in the river. I only saw one dead body being prepared for cremation – that was enough for me so I lit a little candle and floated it in the river with many others for good luck, then back up those numerous steps, past the numerous beggars and back to my hotel for breakfast. Then off to buy my carpet!



A dancer at a function at the YL Meet.

Gwen dressed up for festivities

I used various means of transport during the trip, including planes, cars, buses, a train, a tuk-tuk, bicycle-rickshaw and wheelchair (I'd twisted my knee before leaving home!), the latter involving a forklift truck to get me up into a plane! I refused rides on camels and elephants, having "been there, done that" in other countries.

My most memorable trip was when Sarla arranged for us to visit Elephanta

Island in Mumbai Harbour. This involved an hour's ride in a launch and then a short ride in a miniature train to the foot of the stairway leading up to the caves to view the stone carvings dating back to between AD 450 and 750. For someone like me who didn't feel capable of climbing those steps lined with handicraft stalls and patrolled by pesky monkeys, it was decided I should travel upwards in a palanquin (like a sedan chair), a seat balanced on 2 long poles of wood resting on the shoulders of 4 stalwart Indians. Oh dear! I resisted the impulse to give a Queenly wave as I by-passed people toiling their way up/down the steps. Coming down backwards was a trifle frightening and I wondered how many passengers had been dropped!

Sarla also took us to see Mahatma Gandhi's house (with a wonderful diorama of his life – and later I was to see the beautiful garden where his ashes are buried); a meal in a revolving restaurant (with a view of the cricket ground!). Sarla dressed up all the YLs in saris; and provided evening entertainment of two first-class dance troupes. A radio room was provided, plus a special QSL card, but I didn't get time to operate. And a special postage stamp was printed to commemorate our visit.

Weatherwise it did not rain, was hot and muggy but bearable with lots of air-conditioned buildings. Good to reasonable hotels; too much spicy food for my stomach; lots of kindness shown me by local guides who had to help me up those steps, and not one harsh word to me on the day Aussie beat India at the one-day cricket match while I was there (grin!).

A tuk-tuk & other traffic.

Washing.

Beside the Ganges, early morning.

My thanks go to Sarla for inviting us to India for the Meeting, and to my travel agent for arranging the rest of my trip. Where next?

Editor's Note: *My apologies to Gwen – this contribution somehow was missed. It has been sitting lost in my Inbox for far too long. Better late than never!*

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AMSAT

Bill Magnussen VK3JT

Falconsat-3 latest

Reports have been received that the Atlas launch carrying Falconsat-3 into orbit was successful on March 8, 2007. When Falconsat-3 completes its primary mission, an amateur radio payload is planned to be activated. More details on this feature will become available at that time. It is anticipated that it will feature a digital store and forward facility similar to the UOSATs and an SSB voice transponder.

Miles Mann WF1F reports on the April 2007 ISS crew change

The existing Expedition 14 crew currently consists of:

Commander Michael Lopez-Alegria

Flight Engineer and Soyuz commander Mikhail Tyurin

Flight Engineer Sunita Williams.

Ms. Williams arrived via the Shuttle STS-116 mission. She will also stay on ISS after the crew change in April and become part of the Crew #15.

The new crew #15 due in April 2007 will consist of:

Spaceflight participant Charles Simonyi, an American flying under contract with the Russian Federal Space Agency. Charles will return to Earth with Expedition 14 on April 20th.

Commander Fyodor Yurchikhin

Flight Engineer Oleg Kotov

Amateur Radio Status

Voice and Packet: The Kenwood D700 celebrated its 3-years of service last December. However after three years, 24/7 usage has taken its toll. Last August the memory channels became too corrupted to be reliable. The procedures given to the crew to configure a channel combination did not always match the instructions and there were a few times when I heard the ISS crew calling for a school and ISS was on the wrong uplink frequency.

The D700 was removed from general access last August and is only being used for pre-arranged school schedules, etc. The good news is that we may get an opportunity to reload the OS on the D700 during the upcoming crew change. The D700 on ISS is running a special OS and channels setup, created just for the ISS. If time allows, the D700 will get a fresh OS reload to set it back to the launch configuration. The OS reload also includes a very complex channel configuration and other unique settings. The OS reload requires the removal of the covers and the installation of a special ribbon cable.

The Ericsson HT systems are not currently being used because of an intermittent cable issue. No date on when replacement parts will be flown at this time. The PacCom modems attached to the Ericssons have not been activated in 3+ years and the memory batteries are probably not functional. The Marex Slow Scan TV project, SpaceCam1 was activated for a few weeks last August using a borrowed laptop. The amateur radio projects still do not have a dedicated laptop for the projects and there are no laptops scheduled for flight to be used for amateur radio on ISS in the foreseeable future.

More details on the Eagle Communications Package

It was reported last year that the design stage of AMSAT-NA's Eagle High Orbiting Satellite had come to an unexpected halt due to uncertainties about the state of the most used amateur radio satellite bands by the time it was launched. The position has since been reviewed and the AMSAT-NA Board of Directors approved the general design and some details at a meeting late last year. Here is the latest update released in early April.

- A SSB/CW (etc.) transponder with uplink on U-band and downlink on V-band. System design has a goal that it be usable over 75% of the orbit by an AO-13 or AO-40 capable ground station.
- A SSB/CW (etc.) transponder with uplink on L-band and downlink on S1-band (2.4 GHz). An AO-13 or AO-40 capable ground station will be able to use this payload.
- A low rate text message system, like SMS. It will operate on U/V-bands and be usable over 75% of the orbit by a small terminal on the ground.
- These transponders will be implemented using Software Defined Transponders (SDX).

Eagle will also carry an advanced communications payload (ACP). Using advanced signal processing and RF techniques, the ACP will allow:

- Voice communications on S2-band (3.4 GHz) uplink and C-band (5.8 GHz) downlink using a single 60 cm dish. The satellite antennas will be electrically steered to reduce spin modulation and allow use over 75% of the orbit.
- An additional, fix-pointed, uplink will be available at L-band. This L-band uplink will require a separate uplink antenna at the ground station.

The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. Contact Graham if you wish to be placed on a mailing list for breaking news and net reminders. As a forum for members, AMSAT-VK operates two monthly nets.

AMSAT-Australia Echolink Net. The "Echolink" net meets on the second Sunday of each month. Anyone with an interest in Amateur Radio Satellites is welcome to join the net. Graham VK5AGR acts as net controller. The net starts at 0500 UTC during summer time periods and 0600 UTC during winter standard time periods. Connect to the AMSAT conference server on Echolink a few minutes before these times.

AMSAT-Australia HF net

The HF net meets informally on the second Sunday of each month. In winter (end of March until the end of October), the net meets on 3.685 MHz at 1000 UTC. In summer (end of October until end of March), the net meets on 7.068 MHz at 0900 UTC. Start listening 15 minutes before these times.

All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK
9 Homer Rd
Clarence Park SA 5034

Graham's e-mail address is:
vk5agr@amsat.org

The L-band uplink is intended to allow users in region 1, where 3.4 GHz is not currently allocated to the Amateur Satellite service, to use the ACP legally, by transmitting on L-band.

- High rate data communications, such as streaming video, using a 2 m dish on S2/C bands.
- AMSAT will develop and make available an affordable ground segment for the ACP System.

Full details are available on the AMSAT-NA web site.

Eagle 70 cm receiver completes design review

The web site also contained news of some progress in hardware development. Jim Sanford WB4GCS has authorized the expenditure of funds for purchase of components and construction of four prototypes of the UHF receiver designed by John Stephenson KD6OZH.

Is your station ready for P3E?

I mentioned this issue a couple of months ago but another reminder won't go astray. A check of the AMSAT-DL web site will show that P3E is very much on the horizon. It's not too soon to start either building your HEO station or revamping your old AO-10/AO-13/AO-40 equipment. I recently lowered my tracking antennas for the first time in years and found one or two problems which have been corrected. Don't get caught with P3E in the sky and lots of work to do. The time to get moving is now.

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Correction
AR April 2007

It has been noted that there is an error in the drawing Figure 4 on page 7, in the article by Lloyd Butler.

In the top right hand corner of the drawing, the legend reads "Two 5 cm plates, each 90 mm long and spaced 10 cm apart".

It should have read "Two 5 cm plates, each 90 cm long and spaced 10 cm apart".

The Wireless Institute of Australia

ACN 004 920 745

Advisory Committees
Call for Nominations

Pursuant to clause 18.12 (e) of the Constitution the WIA Board has made Regulations providing for an Advisory Committee for each State of the Commonwealth, the Australian Capital Territory and the Northern Territory, each comprised of three elected members (the Members) and one member appointed by the Board (the Nominated Member). The full Advisory Committee Regulations may be found on the WIA website http://www.wia.org.au/

The function of each Advisory Committee is defined in the Regulations as follows:

(a) To provide advice and information to the Board or to any person authorised by the Board to seek advice or information in relation to any matter identified by the Board or by a person so authorised;

(b) To promote amateur radio, the WIA and membership of the WIA by means including but not limited to:

(i) Maintaining such stock of forms, brochures and other material as is determined from time to time by the Board and in such numbers and subject to such procedures as the Board shall define from time to time;

(ii) Establishing and manning or causing to be manned stands and stalls at appropriate gatherings of radio amateurs or at functions or events promoting amateur radio generally;

(iii) Promoting and selling and causing to be promoted and sold WIA membership, WIA books and products at stands and stalls and otherwise;

(c) Making available and encouraging others to make available local news for WIA broadcasts and releases;

(d) Liaising with affiliated clubs as requested by the Board and at the request of and for the Board arrange and organise conferences of affiliated clubs from such part of such Areas as is identified by the Board, and

(e) Undertake such other tasks and functions as are agreed from time to time.

The new Advisory Committees take office on 1 October this year, replacing the existing Advisory Committees comprising the members of the previous Divisional Councils prepared to serve on the Advisory Committees. Advisory Committees are appointed for three years.

Nominations are called for from WIA Members seeking election as a Member of an Advisory Committee. A Member of an Advisory Committee must be a voting member of the WIA, must reside in the Area of the Advisory Committee and must hold an Australian amateur radio licence.

Any person wishing to nominate as a candidate for election as Member of an Advisory Committee of the WIA must deliver or cause to be delivered to the Returning Officer by not later than 22nd June 2007:

- A statement signed by the candidate signifying his or her willingness to be a candidate for election as a Member of an Advisory Committee, stating which, and also signifying his or her willingness to perform and carry out the functions identified above together with;
- the full residential address, name, age, occupation and callsign of the candidate, and such other biographical details or other information as the candidate wishes to accompany the ballot papers, but in all not exceeding 250 words.

Delivery to the Returning Officer may be made by hand when the WIA national office is open at:

Suite 10, 229 Balaclava Road,
Caulfield North, Victoria 3161

or by mail to:

PO Box 2175,
Caulfield Junction
Victoria 3161

Nominations received by facsimile or by electronic means cannot be accepted.

David Wardlaw VK3ADW
Returning Officer

News from...

VK2

Tim Mills VK2ZTM
Via vk2wi@ozemail.com.au

Clubs

The north coast of VK2 has a new Radio Group. Formed in March, they are the Mid North Coast Amateur Radio Group, based in the Coffs Harbour region. They plan monthly meetings and currently gather at noon on a Sunday at the Coffs Harbour Hotel Bistro Bar. The Group can be found on 3.660 MHz, UHF CB channel 4 and VMF04 CB repeater. Contact point is PO Box 505 Bellingen NSW 2454, email radiosupply@hot.net.au and a web site www.qsl.net/mm0ax/mncarg/. Also in the region is Urunga and they have just held their convention over Easter, an annual event since 1948.

Next month will be the annual auction of the Waverley ARS in Sydney's eastern suburbs: Saturday 23rd June. Also the annual field day weekend of the Oxley Region ARC at Port Macquarie on June 9 and10. Contact with them via PO Box 712 Port Macquarie NSW 2444. The Hornsby and District ARC meeting attendance has outgrown the small meeting room at Mt. Colah. They have taken over the large hall for the fourth Tuesday evening monthly general meeting. They also meet on the second Tuesday with an informal night. Westlakes ARC have RTTY / SSTV activity on Tuesday evening, on their repeater on 146.775. Ian VK2ZIO is still adding to the display at his 'Kurrajong Radio Museum' in the lower Blue Mountains. Do a Google search, email to vk2zio@yahoo.com.au or telephone 02 4573 0601. Ian is able to offer a home to most military and similar electronics of yesteryear. As Ian says – when doing a clean out – don't tip it – preserve it. Give him a call.

At the end of March, the Hunter Radio Group held an education day at the Luskintyre Aviation Flying Museum in the Hunter Valley. In a packed day of activity, the 25 plus in attendance were introduced to simple beam antenna construction, how various transmission modes look when displayed on a spectrum analyzer, constructing a simple J pole antenna and easy to build test gear from the Drew Diamond publications. Then there was lunch and a tour of the various hangers with the operational 'Tiger Moths', the workshop and the Museum. Then it was back to instruction with tips on 'fox hunting', with some practice in locating a hidden transmitter and the day ended with a look at the operation of the 'screwdriver antenna'. It was a great day and another is being planned for the spring. Thanks to all who attended, as well as the lecturers. The day was arranged by Grahame VK2FA and hosted by Jamie VK2YCJ. It is days like these that assist the newcomers, as well as the old hands. What is your club or group doing in education? Please let us know.

ARNSW

Details of the recent AGM will be given next month. About half the ARNSW membership took the option this year to receive the annual report by email. Continuing on Council this year are Brian Keegan VK2TOX, Brian Kelly VK2WBK, Noel May VK2YXM, Norm Partridge VK2TOP, Terry Ryeland VK2UX and Barry White VK2AAB. Retiring this year are Mark Blackmore VK2XOF, Owen Holmwood VK2AEJ and Peter Tolmie VK2ZPT. Joining this year are Michael Corbin VK2YC, Erik Houseman VK2MAN and Beth Langley VK2AO. There was the right number and an election was not required.

One of the membership services provided by ARNSW is a post box address for those who wish a non residential address for their callbook entry. There is a small annual charge for the service. If interested, contact the office for details – telephone 02 9689 2417; FAX 02 9633 1525; Freecall 1 800 817 644, email vk2wi@ozemail.com.au ; web www.arnsw.org.au or postal PO Box 9432, Harris Park NSW 2150.

The next exam session provided by ARNSW will be the weekend 23rd and 24th June.

There are only two months left for the entries in the 80 metre AM transmitter construction, sponsored by the Home Brew Experimenters Group. They meet on the first Tuesday evening, have a 2 metre net on the third Tuesday and gather at VK2WI Dural after the bimonthly T&T, this month on Sunday 27th.

VK2WI

On 19th May, it will be 50 years since the official opening of the VK2WI building. The incoming Council may observe the anniversary as part of the Trash and Treasure and Homebrew gathering on Sunday the 27th May. The evening coverage provided on 40 metres – 7146 kHz – is again being co-channeled by an overseas DRM transmission. There had been a break during summer. Regions surrounding Sydney have the advantage of automatic relays made through local repeaters. More distant evening coverage will have to rely solely on the 80 metre signal, on 3595 kHz.

Some of the morning regional coverage for VK2WI News is provided by the efforts of clubs and individuals who source an input from one of the HF channels and retransmit over local VHF / UHF repeaters. With the bottom of the sunspot cycle, both the relayers and our HF listeners are having a hard time in the morning with the 80 and 40 signals. To assist with alternate signal sources, VK2WI has applied for and obtained a commercial –fixed-service frequency in the 5 MHz spectrum. This will provide a more consistent link signal to the valued relay stations. This transmission, in the USB mode, will commence as soon as crystals and equipment are obtained. Listen to VK2WI for the details. The 10 metre transmission on 28.320 MHz is currently using a horizontal dipole. It is planned to change back to the vertical antenna, used outside broadcast time by the beacon on 28.2615, which was the former arrangement. This should improve the local ground wave. VK2WI News with its statewide coverage is available to clubs and groups wishing to provide publicity of their activities. Send in your items by email to vk2wi@ozemail.com.au with 'VK2WI News' in the subject header. Deadline for all news is noon on the Friday before the Sunday session. Would clubs and groups please check the meeting dates given on your behalf in the VK2WI news and on the ARNSW web site and update the details, if needed.

VK3

Amateur Radio Victoria News

Jim Linton VK3PC
Website: www.amateurradio.com.au ***Email***: arv@amateurradio.com.au

By the time this column is printed the Centre Victoria RadioFest will have taken place. A report and photographs can be found on the Amateur Radio Victoria website and elsewhere.

These types of events enable us to window shop or snap up a bargain. The support of commercial traders and second-hand sellers is the key to a successful event. But to think of them only as consumer opportunities ignores their importance to the amateur radio community.

Old mates catch up, new friends are made and they are a great social occasion. Check the Amateur Radio Victoria event calendars for details of the Moorabbin & District Radio Club Hamfest on 12 May, the specialised GippsTech on 7 & 8 July and the Gippsland Gate Radio & Electronics Club's White Elephant/ Hamfest on 21 July.

The Amateur Radio Victoria (WIA Victoria) AGM will be held on Wednesday, 23 May, at St Michael's Hall, corner Victory Boulevard and High Street, Ashburton, commencing at 8pm.

Members should have received the notice of meeting and annual reports. Those registered for the Members Only section of the website were sent this material via email, while others get it through the post.

Looking back, 2006 saw an even stronger state-wide organisation achieving greater recognition and being able to make worthy contributions to the activity of amateur radio. New initiatives have been and are being developed and it is also pleasing to see that many Foundation Licensees are becoming financial members. The finances remained on track with the organisation ending 2006 with a surplus.

The council, in response to comments made in the 'member forum' session after the last AGM, embarked on an office refurbishment program.

While there are matters still needing to be done, the top priority items such as upgrading the office equipment and computers systems have been completed.

The AGM is a time to reflect on what has been achieved and recognise the contributions of individuals or groups.

Licence classes

The next weekend Foundation Licence training and assessment weekends at Box Hill, will be on May 19 & 20 and 23 & 24 June. For enquiries, to enrol or obtain the Foundation licence manual for $19.50, contact Barry Robinson VK3JBR 0428 516 001 or arv@amateurradio.com.au

The latest Standard Bridging Course held in April attracted seven Foundation licensees eager to upgrade. These courses run by Kevin Luxford VK3DAP are getting excellent results. Work has begun to develop an Advanced Bridging Course, more news about that later.

GippsTech2007

The WIA Eastern Zone Amateur Radio Club (Inc) is pleased to announce GippsTech2007.

This year the main program will be held on Saturday July 7 and Sunday July 8. This event has a well-recognised reputation as the premier technical conference in VK, considering techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts. In addition to the Conference, a Partner's Tour will be conducted, together with an informal social gathering for dinner on Friday and a Conference Dinner on Saturday.

Copies of the Conference Proceedings document from 2006 will be on sale during this year's event. Previous years' Proceedings are also available.

Call for papers

Amateurs (& others with material to contribute) are invited to submit titles and outlines for topics to be presented at GippsTech2007. Presentation slots can be brief (5 -10 Minutes) through to 1 hour. Anything longer - you will need to justify!

Presentations can be formal or informal, or display. We use a lecture theatre for the formal (& semi-formal) presentations. Displays are open during coffee/tea breaks and after lunch. Potential presenters are welcome to contact me direct for further information or to suggest a topic.

The conference is held in Churchill about 170 km east of Melbourne.

Further details can be found at the Eastern Zone Amateur Radio Club web site at:

http://www.qsl.net/vk3bez/

Peter VK3KAI
Chair, Organising Committee
vk3kai@wia.org.au

News from...

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The March meeting of AHARS was a members' Buy and Sell meeting. As usual, there was a wide variety of odds and ends on offer and money changed hands fairly freely. We all know that one man's trash is another man's treasure.

AHARS was again involved in the John Moyle Memorial Field Day at Swan Reach, with a certain amount of success.

There were only eight people there but everyone worked very hard at the radios and some good scores were achieved. The success or otherwise will be proved when the results are published.

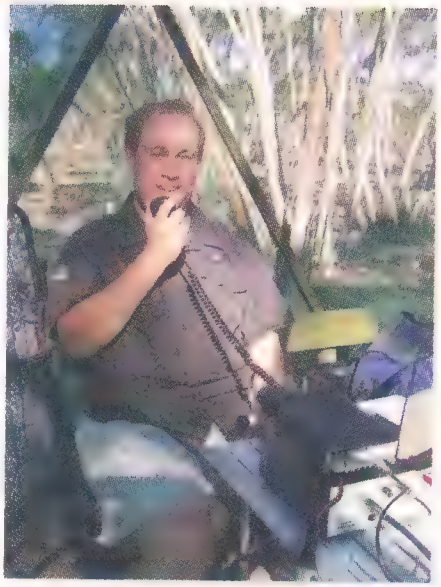
There is no doubt that a good time was had by all and our skill in operating under field conditions was again demonstrated.

As amateurs we need to be able to operate our radios when there is no mains power because we never know when we might be called upon to provide emergency communication. The ability to be of help in a crisis is a proud tradition we amateurs carry and weekends like the various Field Days help to keep us in practice.

Thanks to those who worked so hard that weekend. Hope to see you again next year.

A regular series of interesting meetings has been planned for AHARS for the rest of the year. Any amateur visiting Adelaide is cordially invited to attend our meetings. They are held on the third Thursday of each month in the Blackwood Community Hall at the top of the old Belair Road.

Meetings start at 7.30 pm, with the business meeting afterwards. Come along and enjoy the friendship.



Karsten VK5ZKT at his 80 metre rig with his bed in the background

Riverland Radio Club

Doug Tamblyn VK5GA

The Riverland Radio Club held a successful John Moyle Memorial Field Day activity.

Members of the Riverland Radio Club held their first John Moyle Memorial Field Day contest on the 17th and 18th March, setting up a portable station using the club callsign VK5BRL at Myrla, 20 km south west of Loxton, next to the "malleesky" observatory at the QTH of Adrian VK5AJR and Beth Reimann.

A shipping container was to be the home of the portable station for the duration of the contest. Using an Icom IC-745 with an offset dipole for 40 metres proved to work very well.

All HF bands were very active over the weekend, but 40 m was very popular, contacts were made on 2 metres also.

Andrew Williss VK5LA, Malcolm Gardner VK5MJ, Andrew Pope VK5FAJP and Robert Pope VK5FRJP were well prepared for a night of activity with sleeping bags and camping gear, prepared to make the most of the good band conditions until about 2400 UTC.

The success of the weekend shows in the number of contacts: 82 contacts were made on 80 metres with 135 on 40 metres, 33 on 20 m and 14 on 2 metres, a total of 264 contacts for the weekend. The President Andrew VK5LA said it was a great effort by the club.

Shipping container next to the "malleesky" observatory used for the John Moyle Field Day

Andrew Williss VK5LA and Malcolm Gardner VK5MJ operating during the contest.

VK5

VK5 ham gathering at Crystal Brook

Paul Meier VK5MAP

On behalf of the Moonta Amateur Radio Club, Ian VK5XE organised a gathering for 29th October 2006, to be held at Bowmans Park Reserve, 5 km north east of Crystal Brook.

Amateur operators of all ages arrived with wives and families from the Mid North and as far as Mount Barker, Robertstown and Cowell. The main object of the gathering was to put faces to the voices with whom we talk.

The weather was good to all and by lunchtime most had met the operator on the other microphone. With 32 Amateurs and one SWL, all grades of call signs were present. Most sat under the shade from the large eucalyptus trees for lunch with hardly any flies to annoy us.

Ian VK5XE welcomed all, and spoke about the local repeaters in the mid north of SA.

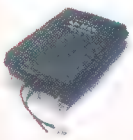
Graham VK5GH spoke of the possibility of adding IRLP to VK5RMN at Port Pirie. Jim VK5AJW spoke about his concerns of maintenance and up keep to VK5RMN, and the distance involved he would have to travel to do the maintenance.

Paul VK5MAP spoke about a possible school for upgrading to Advanced Licence and mentioned that the Southern Flinders Appreciation Group are holding their net on 3.620 at 8:30 pm local time on Saturday evenings.

After some more chin wagging, vehicles started to depart for home, and by all comments it appears the day was enjoyed by all. Hopefully another get together can be organised in the future and it could even become a yearly event.

Back row L-R: Bill VK5FWMA, Hugh VK5NHG, Richard VKSZRI, Andy VK5NTT, Pat VK5HAE, Max VK5SMR, Rob VK5FAAF, Paul VK5MAP.
Centre row L-R: Austin VK5WO, Arny VK5NEX, Ron VK5KRA, Brett VK5ZII, Frank VK5HFH, Mark VK5FMRP, Damien SWL, Peter VK5FPJL, Mike VK5MCB, Brian VK5CO, Bob VK5RI, Larry VK5HBG.
Front row L-R: Gordon VK5GWY, Rod VK5UV, John VK5FJOA, Roger VK5NWE, Neville VK5WG, David VK5HDP, Noel VK5NL, Graham VK5GH, Jim VK5AJW, Ian VK5XE, Mick VK5KDQ.
Absent: Carol VK5ZCH and Ian VK5IS.

FEATURE TECH



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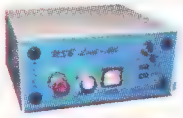

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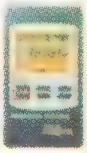

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VK4

At a recent QAC meeting, it was agreed that Ross Anderson VK4AQ would compile VK4 notes for *Amateur Radio* magazine. Clubs are invited to send material for inclusion to Ross in a timely manner.

Contact details for Ross are:

Ross Anderson VK4AQ
PO Box 1511
Innisfail QLD 4860
Tel 07 4061 7236
Email vk4aq@bigpond.net.au

Ross requests that all items arrive by 6th of each month for inclusion in the following month's edition of AR.

It is preferred that all copy be supplied as Word document and photos as separate files (jpg format).

It is anticipated that the first consolidated VK4 notes will appear in the June issue of AR.

News from...

VK7

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au, Regional Web Site: reast.asn.au

Meet the Voice BBQ

The "Meet the Voice" gathering was an outstanding success socially and thanks to all for attending. The day started with registration, a short group discussion on BPL and a BBQ. The theme of the day was of course "MEET THE VOICE" and it was all about putting faces to names and meeting the person behind the callsign. Seven mainlanders were welcomed with representation from VK1, VK3 and VK6. The Sewing Circle Net is YOUR Net from 5 pm to 6 pm daily on 3.590 MHz.

All attendees at the "Meet the Voice" gathering at Ross.

VK7 BPL Virtual Tour Videos Released

There are eight and four minute virtual tour videos of the Mt Nelson and North Hobart BPL trial areas which have been released on DVD and streaming video. This tour shows a visual and audible representation of the interference potential of the BPL technology deployed in VK7. The video contains commentary about the trial, technology, issues and background information on BPL. Take a look at: http://reast.asn.au/vk7bplwatch.php#bpltours

North West Tasmanian Amateur Radio Interest Group

The club is currently converting RT85 Low Band units for use on 6 metres and is looking to place an order for commercial half wave 6 m antennas. Members wishing to order one please contact Tony VK7AX on 6425 2923.

The VK7RAE North West propagation beacons were installed and commissioned at their new home, the SEA/FM Transmitter Site located at Don Heads near Devonport in late November 2006. The 144.474 MHz beacon is working well and receives regular reports. The 50.057 MHz beacon should be back on the air by print time, thanks to Joe VK7JG. The 432.474 MHz beacon is not on the air due to interference to an LIPD operated garage door and alternatives are being explored. The status of all the beacons is available through APRS. Look for the object "VK7RAE BN" and check the comment field. Thanks to the Macquarie Network Broadcaster, Joe VK7JG, Andrew VK7XR, Ivan VK7XL, Tony VK7AX and Mark VK7KMA. Any reception reports or questions can be directed to NWTARIG email: nwtarig@spamex.com or phone: 03 6425 2923.

Northern Tasmania Amateur Radio Club

Wednesday 14 March was the Lilydale Falls BBQ and what a night! 40 people plus 8 dogs attended for a great social get-together. From all reports it was a perfect spot with great weather and a wonderful time was had by all. It was great to see several non-locals and mainlanders from VK4 and VK8 attending.

Congratulations to Joe VK7JG, Paul VK7KPG and Stuart VK7BBB on

REAST Inc. stand at the Model Makers and Collectors Exhibition 2007 in Hobart

receiving their accreditation from the WIA as invigilators.

Radio and Electronics Association of Southern Tasmania

Congratulations to Ben VK7BEN and John VK7JBY on passing and receiving their Advanced licences.

Wednesday 14 March was a very entertaining talk by Mike Hawkins VK7DMH who gave an illustrated presentation on the history of radio control. Mike is a passionate radio controlled aircraft builder and brought along a range of historic and modern RC equipment including one of his latest model aircraft. Mike took the groups from the late 1800s through to the modern spread spectrum systems along with demonstrations. Thanks Mike.

REAST had a stand at the biennial Model Makers and Collectors Exhibition on 24-25 March 2007. The stand was only 4 metres square but we managed to fit – working APRS, SSTV, IRLP, Echolink, HF and VHF portable stations, promo videos, Morse code, optical communications, ATV, construction and a BPL DVD. An extreme amateur radio colour and movement experience for the public showing them what AR is all about. Thanks to all involved.

Our presentation on 4 April was by Rex VK7MO on his OM Len VK3LN (SK) and his amateur TV experiments from the 1930s through to 1950. Rex also brought along a number of historical ATV items including a 45 line interlaced Sanabria disk. Len was awarded the WIA Mercury Award in 1950 for his achievements. Rex then outlined his optical cloud bounce experiments with Justin VK7TW. Thanks Rex for a very entertaining presentation.

VK3

Geelong Radio and Electronics Society (GRES)

Rod Green VK3AYQ

Since formal meetings started in late January, we have been very active, starting the year with a practical evening.

John VK3TKH taught members how to make their own 'iron-on' printed circuit boards. The pattern is printed onto photographic paper, this is ironed onto clean printed circuit board material and etched in the usual manner. Members were amazed how easily good quality boards could be produced. Many are now constructing battery desulphating boards and CTCSS tone encoding boards which are necessary to enable older FM transceivers to be used on FM repeaters requiring tone access.

On another evening Keith VK3AFI, a retired electronics teacher from the local TAFE College, gave instruction on how to solder correctly. Evenings such as this benefit those who are just starting to build their own projects and experienced constructors who have their memory refreshed.

A new competition, to design and construct a crystal set, has generated a lot of member interest and discussion .

There are two divisions, novice for unlicensed and "F" calls, and an open division for all others. All indications point to it being fiercely competitive. It is pleasing to see first time constructors are planning on taking part. Final judging will take place on May 10th.

Members also visited the newly reopened military radio museum at Watsonia. As we have a number of military radios surplus to our needs our Wednesday group sorted out items at our secure store (Old Geelong Gaol), and these were donated to the museum. The old saying is true about trash and treasure. We created a bit of storage space and helped another museum.

Club membership is steadily increasing, attributable in part to the new Foundation Licence.

Weekend classes have been held by John VK3TKH and Keith VK3AFI.and have proved popular and a number of people have gained their "F" call.

This new class of licence has attracted not only younger people but mature adults as well. Some adults who lacked the confidence to tackle exams under the old system have, under instruction, been able to become amateur operators.

Now that they can enjoy the pleasure of our hobby, they may find in time they are able to upgrade their class of licence.

Visitors to Geelong are reminded to go and have a look at our museum in the Old Geelong Gaol, open Thursday to Sunday and school holidays. If they are staying in Geelong, they might like to visit our clubrooms at 237A High St. Belmont. Meetings are held at 8:00 pm every Thursday evening. The Wednesday group meet most Wednesday mornings from about 9:30 am.

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Correction
160 metre noise cancelling

by Mick Hort VK2BZE
(AR, April 2007, pp 14-16).

The author has advised of an error in the circuit diagram (Figure 1) of the noise cancelling circuit. He advises: "*The 2 x 200 pF caps to the left of the drawing should have curved lower bars to indicate a tuning cap and I should have put a dashed line between them to indicate coupling. Readers should also note that the connection from the electronics part of the system to the loop antenna is a coaxial cable connection.*"

ALARA

Christine Taylor VK5CTY

Annual General Meeting

Don't forget the AGM, on the first Monday in May, i e 7th May. It will be at the normal Net time of 1030 Zulu and it will be on 3.580 +/-. Hopefully the band will be quiet and the propagation good.

We usually have a very good turnout for our AGM (and possibly a number of eavesdroppers!), so let us keep up our reputation.

It will be sad to say farewell to one of our longest serving committee members. Bron VK3DYF has decided to 'hang up her committee hat' after many years as Editor and currently as Minute Secretary. She will be missed and so will her meticulously written minutes, but we hope she will continue to come on the Monday Nets and to participate in the Contests and Birthday Nets.

The list of your representatives will be in the next copy of AR. If you have anything you would like discussed just get in touch with someone on the committee and they will try to follow it through. So far the F-calls are not well represented on the committee but that will surely change as time goes by and they discover that the longer licensees are keen to encourage the newer ones.

If, at any time, you would like to offer your services as a committee member, please do not hesitate to let someone know. New blood and new ideas are always welcome.

Do you know about ALARA's birthday?

ALARA's birthday is at the end of July, so we have a Birthday Net on the Saturday closest to 26th July. The Net runs for about two hours on 80 metres. The full details will be in the Newsletter, but a little early warning helps.

In VK5, a Birthday Luncheon is held on a Sunday at the end of July. In VK6, the regular third Friday luncheon in July is a special birthday occasion. Maybe, with some early warning, the other states could arrange a special luncheon at the end of July, too.

If so, please let me, as Publicity Officer for this magazine, and Dot VK2DB as Editor of the ALARA Newsletter, know all about it so that we can let everyone else know as well – with pictures, of course. Aren't digital cameras wonderful!

International YL meeting in South Africa next year

The next International YL meet will be in South Africa, in September 2008. Unfortunately it will be a little difficult to attend both the ALARAMEET in Tasmania and the International Meet in South Africa but I suspect a couple of people will try to do so.

Here is the official invitation from the organisers:

International YL Meet South Africa 2008

Sawubona,*

A big warm South African welcome to you!

The 2008 International YL Meet will be taking place in South Africa and will be organised by Vee ZS6ZEN and Janet ZS5JAN. We invite you to join us on our special SA Yahoo Group so that you can be part of the developments as and when they happen.

The YL Meet and Convention will take place over a few days and will be an exciting and unforgettable experience of the diverse and vibrant cultures of our Rainbow Nation. Thereafter you are invited to join us on various tours through our beautiful country.

And some of the things you will experience.....

You will go on a bush safari to view our wild animals in their natural environment and will discover why the African Bush is such a special experience.

You will experience first-hand some of the different lifestyles of our people, enjoy their traditional meals as well as their dancing and crafts.

You will be delighted with our endless coastline of waves against sand and rocks; plus you will have the opportunity to have some fun in the sun.

You will be awed by our endless green rolling hills where there are sudden sheer drops into deep valleys which often rise into majestic mountains.

You will visit famous places that make up the rich, exciting and often sad history of our country which will touch your heart and maybe move you to tears.

And you will have the opportunity of enjoying different cuisines at our many restaurants; and shop till you drop at our many varied shopping emporiums.

It will be a memorable experience of people, places and landscapes. Yes, we would certainly love you to share in this African adventure while you catch up with old friends, make new friends and enjoy our hobby of Amateur Radio.

Because, of course ..... a radio station with a special call sign will be set for the duration of the convention and the possibility of radio stations being available on the tours is being investigated.

So .... a warm welcome from South Africa. If you and your OM are interested in attending the 2008 International YL Meet and Tour, please acknowledge this mail so that you can join the SA Yahoo Group.

73 Janet Musto ZS5JAN
Moderator of the Yahoo Group

** "Sawubona", means "Hullo" in Zulu (used here to address one person)*

"Sanbonani" means "Hullo" in Zulu to a group of people.

For more information on South Africa and in particular, travelling in SA, you can check out these two wonderful websites: www.southafrica.net and www.southafrica-travel.net

Thanks to Gwen for passing this on to us.

Some interesting insights into other YLs' activities

Maria VK5BMT was a volunteer for the Police and Fire Games recently held in Adelaide. She has her name permanently on the list for various Games and thoroughly enjoys it. For the Seniors Games she was in the communications office but she wasn't sure where they were going to use her for the Police and Fire Games.

Jean VK5TSX and her OM Rod VK5SX spent 8 days in their caravan helping with the rifle shooting. In the course of the event there, Jean took a

young Spaniard under her wing, despite not having a common language. When the Spaniard won the Best Overall Gold medal he insisted on taking the ribbon from his own neck and hanging it around the neck of his Aussie Mum! Jean does not have a copy of the photo just yet, but it will appear in a future ALARA Column in AR.

Australia runs on volunteers and amateurs are part of that group. Recently, Jenny VK4FJAY was a St John volunteer at the Australian Grand Prix in Melbourne (note her petrolhead callsign?). One of her duties was to drive an electric buggy.

However, she was not driving it when it broke down quite near to her St. John post, so she went to investigate, with everyone else. It wouldn't go.

Jenny: "Have you checked the fuse?"

A slightly odd look from the chappie peering into the bowels of the machine before he said that was the first thing he had looked at.

Jenny asked, "How about using a multimeter to check?"

This time they all looked at her in amazement. BUT they went and found a multimeter (an hour or more later) they discovered that the batteries were completely flat. The buggy must have been plugged into the recharger incorrectly. Now you all know why you studied for your amateur exam!!

The St John Grand Prix people will have a slightly higher opinion of YLs, and Jenny in particular from now on.

Altogether, Jennie gave about 800 hours of volunteering to St John in a month! I guess it is someone else's turn!

PLEASE SEND ANY ITEMS OF NEWS AFTER BEGINNING OF MAY TO: Marilyn VK3DMS at gsyme@ncable.com.au

ar

Jenny VK5FJAY with her head in the electric buggy

ALARA and Glasnost! Jenny with a Russian fireman

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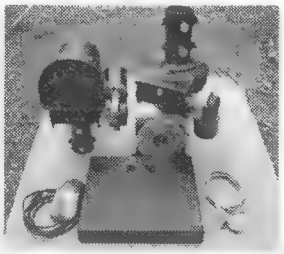

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Hon. Curator
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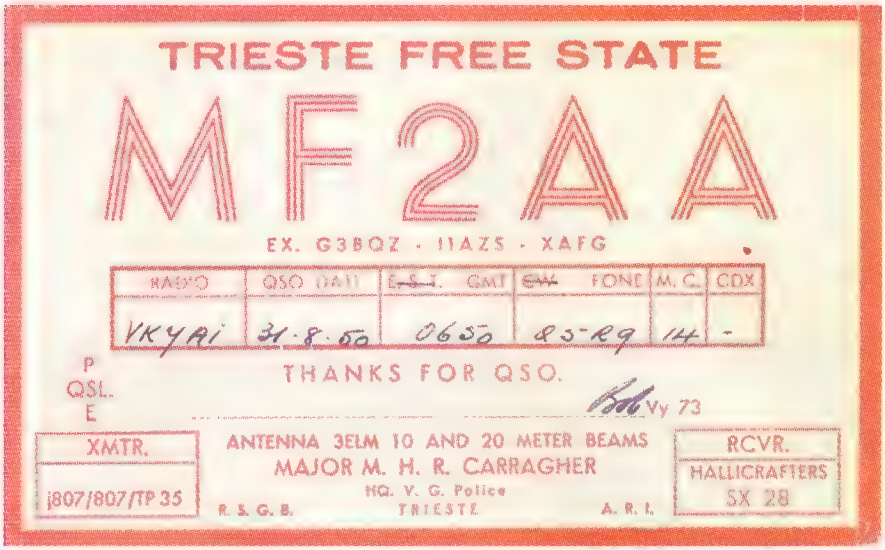
4 Sunrise Hill Road, Montrose Vic 3765
wiaqslcollection@wia.org.au

How callsigns have changed!

The WIA is pleased to acknowledge the donations of the following readers to the Collection:

Years ago **Ken Saxon VK7AI** (SK) of Somerset, Tasmania operated on the DX-bands and used a home-built 18 valve receiver. Things have changed! His QSLs were donated by his brother, Eric, and mostly dated from the period just after World War Two. This was a very dramatic time in amateur radio as far as DX was concerned; (the ARRL's post-war DXCC was announced in QST in February 1947). There were great changes in the status of countries, which were reflected in changes of call-signs. Amongst the QSLs donated were FA8, FA9 Algeria as a French Colony, a VK1 from Macquarie Island before it was allocated a VK0 prefix, the QSL VK5PL from the NT before the Territory gained a VK8 prefix, VK2TV and VK2PI from the ACT and AP5 when it was East Pakistan before becoming Bangladesh. This was a period also of military occupation, as indicated by the M prefix. (This was not an ITU allocation. That body had already allocated the prefix M to Great Britain.) Qatar MP4Q and Trieste MF2 were examples. There was even an EI when that country was commonly known as Eire.



A QSL dated August 1950 from Trieste under military occupation. (QSLs dated from 31 May 1957 counted as Italy.)

Doug VK7DK sent in a small packet of quite old QSL cards, mostly from the period 1924-1930. As Doug explained in his letter to me, a friend of his gave him some QSLs that he had found glued to the wall of a shack he was demolishing. Many, despite being fragile and discoloured by age, gave the Collection cards that were still of considerable archival value. The Old Timer was **Len Crooke A7BQ**. There was quite a variety of station prefixes, several with no indication of country e.g. 9CVY from Missouri, 3CKJ (Penn.), 8AWQ (Michigan), 5FT (Texas) etc, the numbers shared amongst the American States indicating the location. In the early 1920s there was felt to be no need to indicate the country of origin, since signals in the amateur bands never reached Europe until 1924. Intermediates were introduced in February 1927. These replaced existing prefixes that simply had a letter to indicate to country of origin, e.g. U (USA), G (Great Britain), C (Canada), A (Australia) and so on. The intermediates, precursors of our present day prefixes (introduced on 1 January 1929) indicated both the Continent and the country of origin. The QSLs that Doug sent included QSLs such as NU2CC (Continent N, North America and country U, USA), OA5XG from Australia (Oceania, Australia) and HU6BDL from Honolulu. (Was preference given to belonging to the USA over being in the Oceania region?) One QSL, OZ1AC, came from NZ.

In closing, let me remind readers that although old QSL cards are of considerable archival value they are becoming few in number. Recent QSLs serve to enhance the importance of the Collection; QSLs such as the recent Russian QSLs, IOTA, rare DX and pictorial QSLs being particularly sought by the WIA.

Good DX.

ar

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by

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Phil Smeaton VK2BAA

Contest Calendar May – June 2007

May	5/6	ARI Intl. DX Contest	CW/SSB/RTTY
	13	VK/trans-Tasman 80 Metres Phone Contest	SSB
	12/13	CQ-M Contest	CW/SSB
	19/20	Baltic Contest	CW/SSB
	26/27	CQ WW WPX Contest	CW
	27	VK/trans-Tasman 80 m CW Contest	CW
June	9/10	ANARTS WW RTTY Contest	Digital
	9	Portugal Day DX Contest	SSB
	9	Asia-Pacific Sprint Contest	SSB
	16/17	All Asian DX Contest	CW
	23/24	Marconi Memorial HF Contest	CW

Welcome to this month's Contesting Column

To be Contesting, or not to be Contesting: that is the question

(with apologies to Billy Shakespeare).

Whether 'tis nobler in the mind to suffer the slings and arrows of outrageous QRM..... etc.

Contesting is loved by some, hated by others and sometimes tolerated by Net Controllers. Contesters fill the once quiet bands with stations CQing, hunting/pouncing, exchanging seemingly bizarre information and generally having a good time. So what drives these people to want to do this and how do they squeeze the activity into their home life schedule?

Man has always competed with his fellow man since time began. Regardless of the pursuit, if people are engaged in a given activity, there will come a time that they will compete to see who can be the 'best' in that given subject.

Radio enthusiasts are no different in this respect and are often found on the non-WARC bands competing against fellow Hams - but often against themselves as well, possibly trying to beat last year's score.

Most, but probably not all, weekends feature a contest of some description. Complaints of frequency occupancy are the most frequent cry, but to expect empty bands is rather like paying for your car registration and then expecting zero traffic congestion!

Most people who engage in a hobby utilise spare time to enjoy their pastime. Family and work pressures on available time are always an issue, but probably never more before than now, as we seem to wish that the 24 hour day could be extended by a few hours in order to get everything done that is required of us.

Making Time for Contesting

So where does this leave enjoying radio as a hobby?

Striking a fine balance between desired and required activities is likely to be the key to success. Enhanced attention to one aspect may leave a void in the other - although there are life's priorities to observe of course! Contest durations play a large part in the balance, as a 48 hour contest is quite a commitment to make in its entirety, but having the facility within a contest for a section of reduced duration for example, allows participants to have some contesting fun and satisfy their competitive side whilst catering for family and/or work commitments too.

Newcomers to the hobby might baulk at the multi-operator contest stations and consider that this is out of their reach. These stations did not 'appear' overnight, but took considerable effort and dedication to assemble over time. Stations such as VK6ANC in Perth WA, VK2ATZ in Teralba NSW and ZL6QH in Wellington all fall into this category, as they are the result of planning and considerable motivation by their respective Team members. Such set-ups, if financed by an individual, would cost a small fortune but a gathering of like-minded operators can soon amass an impressive array of equipment to be gathered together for a weekend.

For old hands and newcomers alike, a good way to gain knowledge and be part of a multi-operator team is to go along to a radio club meeting and make yourself known to the members. Then, volunteer to help set-up the station prior to the contest and learn how it all goes together, the problems encountered and the fixes for those problems.

Watch what goes on and hopefully gain some time in the operating chair to experience contesting in a way that might not be possible from home. I remember my first time contesting as part of a team, as I happily sat for hours on the key populating the written log and the paper 'dupe' sheets (maybe I'm showing my age a little here...) but struggling with some stations as they were a bit weak.

Someone had been watching me struggle and with a big broad grin on his face, rotated the beam..... I'd not used anything other than a dipole from home before that day and forgotten that a directional antenna was in use which would require moving from time to time!

Contesting is unlikely to be loved

by all. It's entirely up to the contesting populations to publicise anything and everything that makes contesting worthwhile: the self-training and technical development; the pleasure of doing something difficult and doing it well and the strong world-wide sense of community.

I believe that contesting is good for other aspects, including areas such as encouraging newcomers to the hobby and often the population of rare DX locations otherwise bereft of activity. Contesting can certainly utilise the bands to their fullest extent at times and this is usually where the perceived problems start as frequencies considered to be hallowed ground for a given purpose are often found to be occupied during an international contest. Tolerance and adherence to the relevant band plan can often save the day!

Contesting Basics 101

I thought that a bit of background to contesting in general might enlighten some – but possibly at the risk of boring those already enlightened! I'm not saying that this is definitive, but it should serve to offer some background into why contesting came about and the 'mechanism' behind the process.

Contests tend to be sponsored by amateur radio societies, radio clubs, or radio enthusiast magazines. The organisers publish the rules for the event, collect the logs from all stations that submit an entry, cross-check the logs to generate a score for each station and then publish the results. Awards granted by the sponsors are typically paper certificates, plaques or trophies.

During a contest, each station attempts to establish two-way contact with other stations and exchange information specific to that contest. The information exchanged could include a signal report (often just '59' or '599'on CW and not a 'real' report as such), the operator's name, the geographic zone in which the station is located, or an incrementing serial number.

For each contact, the radio operator must correctly receive the call sign of the other station as well as the information in the exchange, and record this data along with the time of the contact and the band or frequency that was used to make the contact, in a log. Stations can only make contacts during the time period defined for the contest, on the radio bands specified in the rules for the contest.

A contest score is calculated based on a formula defined for that contest. A typical formula assigns some number of points for each contact, and a "multiplier" based on some aspect of the exchanged information. Many HF contests reward stations with a new multiplier for contacts with stations in each country. The points scheme needs to be examined closely by the operator, to allow an operational methodology to be considered that will be likely to maximise the potential for a high score.

For example, if the scheme requires specific call areas or countries to be contacted, points will not be gained for contacts other than those specifically mentioned within the rules. Hence, making plans for contacting overseas stations by studying propagation forecasts and such during an inter-VK/ZL contest, is unlikely to raise a winning score.

After the logs are received by the contest organiser, logs are checked for accuracy. Points can be deducted or multipliers lost if there are errors in the log data for a given QSO. Most contests offer multiple entry categories, and declare winners in each category. Some contests also declare regional winners for specific geographic subdivisions, such as continents or countries.

Probably the most popular section for participation is the single operator category, in which only one individual operates a station for the duration of the contest. Multi-operator categories allow for teams of individuals to operate from a single station, and may either allow for a single transmitter or several to be in use simultaneously on different amateur radio bands. Many contests also offer team or club competitions in which the scores of multiple radio stations are combined and ranked.

A (Potted) History of Contesting

The origin of contesting stems from the Trans-Atlantic Tests of the 1920s, when radio operators first attempted to establish radio communications across the Atlantic Ocean on short wave frequencies. In 1927, the American Radio Relay League, which had been heavily involved in organising these tests, proposed a format for the annual event, encouraging stations to make as many two-way contacts with stations in other countries as possible.

The 1928 International Relay Party, as the event was named, was the first organised amateur radio contest. The International Relay Party was deemed a success and was sponsored by the ARRL from 1927 through 1935. In 1936, the contest name changed to the ARRL International DX Contest, the name by which it is known today.

Another important innovation in early

Photo 1: Westlakes Radio Club during John Moyle Field Day 2007. Photo: VK2BPL

contesting was the development of 'field day' operating events. The earliest known organised field day activity was held in Great Britain in 1930, and was soon emulated by similar events in Europe and North America. Field Day events were promoted as an opportunity for radio amateurs to operate from portable locations in environments that simulate what might be encountered during emergency or disaster relief situations. The concept is still alive today, with Field Day operations being the basis for a number of domestic contests in Australia.

The Westlakes Radio Club enjoy this format, as can be seen in Photo 1 during the recent John Moyle Memorial Field Day this year, operating as VK2ATZ/P.

Logs and Log Checking

Most competitive operators log their contest QSOs using contest logging software on a personal computer. There are many different software logging programs written specifically for radio contesting, with quite a number of excellent packages now available for VK domestic contests in addition to the international contests.

The logging programs are also able to perform additional duties besides simply recording the log data; keeping a running score total based upon the scoring system decreed for the contest, display which multipliers have been worked (or not!) and provide the operator with data about propagation.

At the end of the contest, each participant submits the log to the contest sponsor for adjudication. Once the contest organiser receives the logs from the competitors, the logs undergo a process known as cross-checking. In cross-checking, the QSOs and information recorded in the logs will be examined for errors or omissions by comparing the data within the logs for each QSO. This task is often performed by an automated checking system, usually based upon software running on a PC.

Anomalies are highlighted to the adjudicator for examination, reducing the amount of work for the adjudicator. Most contest organisers enforce penalties for inaccuracies in the log, which means that the need for speed in operation must be balanced against the requirement for accuracy.

Results and Awards

Most contests are sponsored by organisations that either publish a membership journal, or sell a radio enthusiast magazine. The results of radio contest events are printed in these publications, and often include an article describing the event and photographs of radio stations and operators in the contest in addition to a detailed listing of the scores of every participating station. Winners in radio contests often receive paper certificates, wooden plaques or trophies in recognition of their achievements.

I'll include a little bit more in 'Contesting Basics 101' next month, taking a look at a few of the contesting aspects in a bit more detail.

RD Contest 2007 Rules

Peter Harding VK4OD, the contest manager for the RD Contest advises that no rules changes will take place for the contest, so if you're the author of logging software for RD, that has got to be good news! However, Peter reserves the right to make a few tweaks next year....!

Commonwealth Contest – Claimed Scores for VK Team

The Commonwealth Contest (aka Beru) in March was more of a battle than ever before, with the added twist of Teams being introduced this year encouraging a healthy increase in participation from VK stations. Personal circumstances forced me off the air unfortunately but my impact upon the prowess of the VK Team was negligible and the Team produced a very competitive score indeed. No final results in yet as it's a little early for them, but I'll report them when they are.

The new format generated an impressive revitalisation for the contest, with the bands abuzz with CW from around the planet. The contest is not dependant upon 'rate' as such, as the point scoring call areas are somewhat limited and the real methodology for boosting your score is frequency agility and propagation knowledge.

Knowing when to change band for a given call area to pick-up those all important bonus points is the key to success. Being able to monitor a second band whilst working another aids productivity and maximises returns in relation to time spent on a given band.

Moving a station from one band to another can often put more bonus points into the log, as openings can often be short and sweet! Unfortunately, 20 m proved to be not its usual self during the contest, with propagation not being particularly favourable, but 40 m produced some excellent chances to boost scores as it opened from VK2 to the UK and VE early on the Sunday morning.

For Saturday night, 40 m and 80 m are the bands of choice in this contest to bolster bonus points. Even 15 m was patchy but 10 m didn't seem to do the job at all and it may be a year or two before any significant improvement, for the needs of this contest at least, is seen on this band.

Claimed scores by the VK Team are as follows:

VK4BUI	2810
VK2NU	2935
VK4EMM	5020
VK6BN	3370
VK2BJ	5090
VK6HD	3280
VK4XA	2655
VK6LW	5505
VK4TT	2945
VK4XY	2895
VK6VZ	3645

Congratulations to all for a superb and highly competitive effort! A huge vote of thanks to Steve Ireland VK6VZ is highly appropriate, for his sterling work to bring the VK Team together and offer guidance on operating strategies. Well done Steve!

ANARTS & Contest History

The Australian National Amateur Radio Teleprinter Society (ANARTS) was founded in 1977 by a group of enthusiasts, in particular VK2SG and VK2EG, who saw the potential of and were keen to experiment with Digital Communications for Amateur Radio.

The Society became very active, had a membership into the hundreds and provided a RTTY Broadcast each week. The Society's magazine was issued each month and had excellent content, helping many operators get started and improve their station.

ANARTS has managed to maintain its weekly RTTY Broadcast, which has

existed since the inception of the Society, and also its worldwide RTTY Contest.

The ANARTS contest has something of a chequered history. Due to personal circumstances, the contest manager, Colin Davies, has relinquished the role to ANARTS Secretary/Broadcast Officer Pat Leeper VK2JPA. Pat can be contacted on patleeper@optusnet.com.au for further information, but Pat does not have any contest history to hand as this is her first tentative step into the world of contest management – so be kind!

I believe that ANARTS is the only Australian RTTY contest, so why not give it some support in June and see how you go….?

Sad News?

Recent news (Washington Post) on the 1st of April states that CQ Magazine is to suspend its sponsorship of all contests that it has been associated with. The situation will be reviewed in a few years time, but this action is reported to be the result of perceived negative association with recent poor band conditions and has suffered from detrimental magazine circulation as a result. It would appear that CQ has recently been the recipient of an increasing volume of complaints about conditions, sometimes virile, and occasionally abusive.

Is this sad news for contesting? Well, I'd suggest that it would be prudent to take note of the date of the issue!

If you have any contest related material for inclusion within the column, topics that you'd like covered or some experiences and pictures you'd like to share, then please feel free to get in touch via vk2baa@wia.org.au. See you on the bands.

73 de VK2BAA Phil Smeaton

ANARTS WW RTTY Contest Rules 2007

Australian National Amateur Radio Teleprinter Society

P.O. Box 93 Toongabbie NSW 2146

CONTEST PERIOD: The contest takes place on the second full weekend of June each year. Contest starts 0000 UTC Saturday and ends 2400 UTC Sunday. For 2007 the contest dates are Saturday 9th and Sunday 10th June 2007.

Not more than 30 hours of operating is permitted for Single Operator Stations. Non operating periods can be taken at any time during the contest. Multi Operator Stations may operate the entire contest period.

A summary of operating times is required with each single operator log.

BANDS: Use Amateur bands 80, 40, 20, 15, and 10 metres.

MODES: All digital modes except CW are permitted including all "Sound Card Modes" such as PSK etc.

NOTE: No satellite operation is permitted.

CLASSIFICATIONS:

(A) Single operator (One transmitter)

(B) Multi operator (One transmitter)

(C) Short wave listeners

MESSAGES: To consist of RST, Time UTC, and CQ Zone.

SCORING: For each band - Use the "Exchange Points Table (Marked 1994)" to obtain QSO points for each QSO. Any contact with VK2SG earns double the table points for that QSO. Count Countries/Multipliers worked (see definition). Total all bands used to obtain: (1) Total QSO Points, (2) Total Countries/Multipliers.

World stations calculate "VK BONUS", as follows: 100 points for each VK worked on 14 MHz, 200 points for each VK worked on 21 MHz, 300 points for each VK worked on 28 MHz, 400 points for each VK worked on 7 MHz, and 500 points for each VK worked on 3.5 MHz.

CLAIMED SCORE:

For World Stations is calculated by multiplying: (1) total QSO points by (2) total countries/multipliers then that total by (3) the number of continents worked during the contest. Each continent counts once only to a maximum of 6. To calculate the total points obtained ADD the "VK Bonus" to show Grand Total Claimed Score.

Example for World Station: 720 QSO points calculated from points table (1) x 29 countries/multipliers (2) x 5 continents (3) = 104,400 points, plus (+) 6 vk stations worked on 14 MHz (that is 600 VK bonus points), giving a grand total of 105,000 points.

CLAIMED SCORE: For Australian Stations (VK1-VK8) is calculated by multiplying (1) total QSO points by (2) total countries/multipliers and then that total by (3) the number of continents worked during the contest with a maximum of six as stated above. This calculation gives the Grand Total Claimed Score.

IN ALL CASES: A station may only be worked once per band, but may be worked on other bands for QSO points and multipliers.

COUNTRIES/MULTIPLIERS: Are counted as per ARRL DXCC list of countries, except that Australia (Areas 1-8), Canada, Japan, and U.S.A. mainland do not count as separate countries. However, each call areas VK1-VK8, and each call area in Canada, Japan and mainland U.S.A. do count as separate multipliers.

CONTACT with one's own country/ multipliers counts for QSO points and as a Multiplier. (Remember that call areas VK1-VK8, and call areas in Canada, Japan, and U.S.A. mainland are Multipliers).

LOGS: Log can be in either .TXT or Cabrillo format. If submitting a Postal log in .TXT format, a copy on a floppy disc would be appreciated. This will allow conversion to Cabrillo format to help with log checking.

Logs submitted in Cabrillo format should be in the prescribed ANARTS Cabrillo Template or Format.

Logs submitted in .TXT must be formatted in this order:

1. DATE
2. TIME UTC
3. CALLSIGN OF STATION WORKED/HEARD.

4. MESSAGE INFORMATION SENT/RECEIVED (RST/TIME/ZONE)
5. POINTS CLAIMED.

Summary report for .txt logs:

1. Summary sheet must be submitted for logs in .TXT format, and must show: Callsign of station, bands used, the points claimed for each band, the number of Countries/Multipliers worked on each band, the number of Continents worked and details of VK BONUS calculations for World Stations.
2. If submitting the log by Mail, include the operators name and address.
3. A summary of the calculations made to obtain the GRAND TOTAL CLAIMED SCORE as per the "Scoring" instruction will assist checking.
4. The general certification regarding compliance with Rules is required, but signatures are no longer necessary if submitting by E-mail. However, name and callsign of the operator is still required.
5. Multi-operator logs must contain the Name and Callsign of each operator.
6. Dupe sheets will be appreciated for any band log over 75 QSOs, but are not required if the log is in Cabrillo format.

AWARDS: A Plaque is awarded to first in World in Classification A. Certificates will be awarded to: 1st to 5th, places in the World, 1st to 3rd places in each of six Continents, 1st to 3rd in each Country/Multiplier in each Classification.

THE JUDGES decision will be final and no correspondence will be entered into. We reserve the right to list multiple awards on any Certificate and/or vary the numbers of awards given without notice. Logs become the property of A.N.A.R.T.S.

CLOSING DATE: Logs must be received by the Contest Manager A.N.A.R.T.S., P.O. Box 93, Toongabbie, NSW, 2146, Australia or by E-mail to patleeper@optusnet.com.au by 1st September of the year of the contest.

POSTAGE AND HANDLING FEE: A postal fee is applicable with the following options:

1. Contesters submitting their logs by E-mail will have the Contest results, Managers report, Contesters comments, and the next year's rules, sent to them via the E-mail address used to submit their log. No Awards will be posted. Undelivered E-mails due to Contesters changing their server will not be pursued. Contesters changing E-mail address are responsible for advising the Contest Manager.
2. Contesters submitting their logs by E-mail and wishing to receive all the above items, plus a points table, and/or any award they may have won, Plaque or Certificate, must submit a separate Postal Communication to ANARTS: Post Office Box 93 Toongabbie, N.S.W. 2146, with a remittance to the value of 5 (Five) United States dollars.
3. Contesters submitting their logs by Post and requiring ANARTS to send them the information mentioned above, must include a remittance to the value of 5 (Five) United States Dollars.
4. Postal logs received without the required remittance will be accepted and processed in the normal way. No awards or other information will be posted in return.
5. The fee for Australian and New Zealand Contesters is now 5 (Five) Australian Dollars for 2 consecutive contests.

Notes on submitting logs by E-mail

A.N.A.R.T.S. can now accept your log in Cabrillo format, however please make sure you submit your log in the correct Cabrillo format. Going Cabrillo has required slight changes to the rules for 2007. Example, contact with one's own Country/Multiple now counts as a Multiple for band. This brings the rules in line with other Contests. Please make sure you read the rules to see other slight changes.

Please check your log has the following before transmitting: Your Callsign, Name and Postal Address, also the names and Callsigns of the other operators if you are submitting a log for Category B, Multiple Operator. Include Your E-mail address, allowing us to send you the results. Check all the items required in the Summary Sheet are correct, that is you have included per band: number of QSOs, number of QSO Points, number of Multipliers, number of Continents worked and number of VK Bonus Points per band. Your log cannot be processed if these items are not shown, unless it is in the correct Cabrillo format. Please advise ANARTS of any change in email address.

Do not name your log ANARTS. Use your own callsign or other name of your choice. Example VK2CTD.LOG. Many stations have used ANARTS for their log title, example ANARTS.LOG. Each of these logs has to be renamed, the Computer puts a little window on the screen saying "There is already a file of that name, do you want to overwrite." All such logs have to be re-titled, so your cooperation please.

A list of logs received is sent on to the RTTY Reflector rtty@contesting.com as time permits and is also sent to contest@ww and rtty@ww on Packet Radio.

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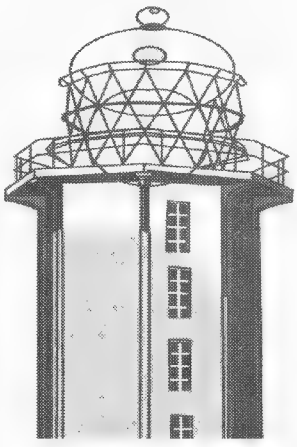
International Lighthouse/ Lightship Weekend



0001 UTC 18th AUGUST TO 2359 UTC 19th AUGUST 2007

DX – News & Views

John VK4OQ
P.O. Box 7665, Toowoomba Mail Centre, QLD 4352.
Email: john.bazley@bigpond.com

It's hard to believe that it is nearly 12 months since Neil VK6NE last produced his 'most wanted' list from a VK point of view. Has it changed much during the past 12 months? Incredibly – 'NO'. It is exactly the same as before. I must admit I find it hard to believe, for during the period between the surveys there has been a lot of activity from VP8 South Shetland Islands, YA Afghanistan and 9Q The Congo and also a DXpedition to 1A0 S.M.O. of Malta. Neil in his latest list has compared the 'wanted' entities with other parts of the world and included some comments from a VK point of view.

The first: 'That North America has been well catered for over the years.' We both agree that that is inevitable on two counts – the number of amateurs in North America and that the bulk of the funding generally comes from that area.

The second: 'Is it safe to say that past DXpeditions have not favoured VK'. We have a difference of opinion here! I personally have not found this so, but from the comments from a number of well known VK6 DXers, they obviously disagree with me on this point. I do agree that it is VERY difficult at times to get the point across to some DX stations that if the band is open to VK6, that does not mean the whole of VK, but I do think that most DXpeditions are aware of this. Most DXpeditions require a major commitment from the participants with months of planning. Their main object is to work as many stations as possible in as many countries as possible. Things will undoubtedly improve when conditions start to open up the other HF bands for consistent DX and then we will probably not have such a "great Divide" between VK6 and VK4!

Neil's 2007 list is:

Equal 1st	3Y/B, PY0/T, VP8/O
Equal 4th	VP8/S, VP8/G
Equal 6th	P5, PY0/P, FR7/J
Equal 9th	KP1, SV0/A, 3C/0, BS7, CY0, VU7
Equal 14th	HK0/M, PY0/F, VP8/S – Shetlands, 7O
Equal 18th	CE0/SF, S0, TY, YA
Equal 22nd	EP, FO/C, 1A0, TT
Equal 25th	4U1ITU, 9Q, KP5, CE0/JF
Equal 29th	VP6/D, 3Y/P

Many thanks, Neil for compiling this list annually for us.

Interestingly results of the 2007 Oceania Most Wanted List are in, compiled by Mark Sullivan ZL3AB.

Equal 1st	KP1, 7O
3rd	3C0
4th	BS7
5th	FT8Z
Equal 6th	FR/J, KP5
Equal 8th	FR/G, PY0/P, TN, VP8/S - Shetlands
12th	P5
Equal 13th	3C, HK0/M, ZS8

That leads to – 'The U.S. Department of Commerce, NOAA, Space Environment Centre has released their Predicted Sunspot Numbers and Radio Flux Report at http://www.sec.noaa.gov/ftpdir/weekly/Predict.txt . The predicted solar minimum is still 6 months away. The new updated predicted minimum is now expected in September, with a predicted solar flux average of 74.3. The prediction values are based on ISES cycle 23 forecast of 13-month running smoothed values. Just a few months away!

DXCC: All YU6AO QSOs on or after June 28, 2006, are now valid for the DXCC award. If you submitted cards for these dates earlier and received no credit please contact dxcc@arrl.org via e-mail.

The following QSLs may also now be submitted:

ZL9BSJ/p Auckland & Campbell (Sep 12, 2006)
5A7A Libya (Nov 15-20, 2006)
VU7LD Laccadives (Dec 1-30, 2006)
VU7RG Laccadives (Jan 14-26, 2007)
DX0JP Spratly Islands
9M4SDX Spratly Islands
9U9Z Burundi
YWØDX Aves Island
1A4A Sovereign Military Order Of Malta

BS7 – Scarborough Reef, I am sure that the majority of readers will not require reminding that an international team plans to activate Scarborough Reef at the end of April. You can find the operator list, maps and more information about how to contribute to this expensive DXpedition on their website: http://www.bs7h.com

BS7 is certainly wanted by a lot of DXers, for only 24,989 QSOs have been made so far from the only two approved expeditions that took place in April 1995 and April/May 1997.

A2 – Botswana Frosty K5LBU plans a new trip to Botswana and is still looking for two people to join him from July 4 – 24, 2007. Daniel ZS6JR, who is another member, has already found a suitable QTH six hours north of Johannesburg. The whole of the equipment is already in Johannesburg, so interested amateurs only have to bring their laptops for the logbook and clothing. If you are interested please contact Frosty via e-mail to: frosty1@pdq.net

J5 - Guinea-Bissau and 6W – Senegal. Peter HA3AUI, who was active as J5UAP earlier, will be in Western Africa again between Feb 25 and Apr 30 (or longer). He will reactivate his old callsign J5UAP and use the call 6W2SC from Senegal. He prefers working in digital modes but also in SSB on all bands.

QSL via HA3AUI, via bureau, direct, LoTW or eQSL.

TF7/SM5ELV Kent will be on Heimaey Island, Iceland, EU-071, June 10-13. He will get on as many bands and modes as he can using 100 watts and a vertical antenna, with a dipole possible as a second antenna. QSL to his home call.

OX Greenland. A Special Event station, OX60AD, marks the 60th Birthday of the U.S. Air Force, 56th anniversary of Operation Blue Jay and the 1951 Defence Agreement between Denmark and the United States and Greenland Home Rule, which established the Thule Defence Area, for the protection of Greenland and North America. Operations will start April

1 until April 30, 2007.

The base itself was built under the secret code name "Operation Blue Jay". The original construction was completed in only 104 days. Thule is now a combined effort of U.S., Canadian, Danish and Greenlandic personnel, working together to ensure the safety and security of North America and Greenland.

Thule Air Base is located on the northwest coast of Greenland, 700 miles north of the Arctic Circle and approximately 946 miles from the North Pole.

Operations: 6 m (50.145 +/-), 10 m, 15 m, 17 m, 20 m, 40/80 m. Modes: CW, PSK, RTTY, HELL, SSB. Operators: Dennis OX3UR (QSL manager, Co-Director), Dwayne OX3PG/KD4POJ (Co-Director), Johnny OX3WM, Max OX3PJ and various guest Operators.

3B9 Agalega. The Polish team with plans for a DXpedition to Agalega are now looking into a time frame from June 6th to 18th. They are hoping to get permission, licence and most important to reserve the right ship. The team has a Web page at http://3b6.godx.eu/

3B8 Mauritius. Mart DL6UAA will be active again as 3B8MM from Mauritius (AF-049), starting on 5 April for a few weeks. He will operate mostly CW, but will also give SSTV a try (14230 kHz). QSL via home call, direct or bureau. His web site is at http://www.dl6uaa.de/indexa.html

ER Moldova. Andrei Fyodorov RW3AH (9X0A, KL1A, 4O8AA, etc.) is heading back to the Republic of Moldova, where he will be QRV as ER/RW3AH from March 23rd to April 12th. Andy will be QRO with a special emphasis on 80 and 160 metres, along with 20 metres SSB and CW. QSL via QRZ.COM.

Happy DXing.

Special thanks to the authors of *The Daily DX* (W3UR) – 425 DX News (I1JQJ) and QRZ DX for information appearing in this month's *DX News & Views.*

For interested readers you can obtain from W3UR a free two week trial of *The Daily DX* from www.dailydx.com /order.htm

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Spotlight on SWLing

Robin Harwood VK7RH

Winter disturbances and dropouts

Winter has come and propagation has altered, with the higher frequencies becoming dead as soon as it gets dark. In daylight hours, the lower frequencies are practically open for 24 hours. I am hearing signals from Europe and Asia as early as 0200 UTC. I believe that we have indeed passed the Solar Minimum and I expect that we will observe a slow rise in the Sunspot numbers. However, there will be a sharp increase in the number of disturbances and dropouts. On one recent day I could not detect any shortwave signals for several hours, even using remote receivers via the Internet.

Major broadcasters such as the BBC World Service have decreased their HF output as from 25th March and this trend will sadly continue at the end of October. Fortunately I do have access to one of the streams on my subscription TV as well as being able to access all the services on the Internet. The 'Beeb' has even reduced their DRM output.

As I have reported earlier, Deutsche Welle now comes from senders outside of Germany, whilst Poland has shut down its senders and has hired senders in Germany and Finland. The Voice of Russia hires airtime from the senders of the Vatican Radio and the latter is relayed from senders in Siberia to reach audiences in Asia.

Both Iran and Vietnam utilise the shortwave resources of senders in the Baltic republics of Latvia and Lithuania. Libya broadcasts from senders in France. Algeria is broadcasting from senders in the UK. No wonder it has become so confusing.

I note also that Libya has been trying to buy the Gabonese station known as Africa No. 1. Recently their senders have been heard with Arabic programming yet they are deliberately selecting channels that are used by anti-Gaddafi clandestine stations. It is very much a cat and mouse operation between 17635 and 17660 from 0500Z.

Also the disappearance of the more powerful senders from HF has made it possible to hear the smaller domestic shortwave outlets, which have been long buried.

Monitors report that many Brazilians are now being regularly heard on the 25 and 31 metre broadcasting allocations. There were also hundreds of Peruvian stations, often only operating less than 500 watts, but a recent crackdown by licensing authorities have seen many of these unofficial broadcasters permanently disappear off shortwave.

The Chinese seem to be rapidly filling shortwave channels and it is so easy to hear them almost round the clock. I am hearing either the external service, China Radio International, or one of the domestic networks, occupying practically the entire broadcasting spectrum.

This brings back memories of the Soviet era when that administration outlaid a huge expenditure on shortwave broadcasting. These days Russia is not as easy to hear as it was once.

Well that is all for this month. You can email your comments and suggestions to vk7rh@wia.org.au or via snail mail to 20/177 Penquite Road, Norwood, Tasmania 7250.

73 de VK7RH

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Are you managing the estate of a 'Silent key'?

Please save any QSLs for the National QSL collection, but first contact:

The Hon. Curator,
Ken Matchett VK3TL
on (03) 9728 5350
or email: jeandawson@iinet.net.au

Rare DX, special call-signs prefixes and suffixes, pictorials and pre-war QSLs are needed.

Let us save something for the history of amateur radio.

Silent Keys

Peter van Gemert VK2ALL

1934 - 2007

Long-time WIA member Peter van Gemert VK2ALL of Bathurst died in the early hours of Monday April 2nd 2007, in hospital, at age 73, after a brave fight against cancer. He is survived by sons Tony VK2BYB and Guy, daughter Lisa and their families; also brothers Henk and Hans from Holland, who were with Peter as he passed away. Orange Amateur Radio Club and the Bathurst group were well represented at Peter's grave-side ceremony on April 4th.

Amateur radio was Peter's major long-term interest and he was the quintessential 'true amateur' in that he designed and built as many pieces of his own equipment as possible and always with excellent results. In his hands the technical hobby became a science and even an art, thanks to his inventive mind and deep knowledge, love and understanding of electronics.

Peter's well-equipped workshop-cum-ham shack, with his home-brewed 50' tower alongside, carrying his antennas, is a visible memorial to his passion for electronic devices and equipment. Many a Bathurst club meeting was held in that workshop, where he was proud that technical discussion usually took precedence over formalities.

Bathurst residents remember Peter van Gemert as the reliable, friendly TV repairer; or as the gifted part-time TAFE teacher of electronics. Earlier in his career Peter worked for Harmor and Heath in Sydney, commuting daily from Woy Woy. A regular visitor for decades to the Gosford/Wyong Field Days and those at Wagga, collecting interesting and useful items, his last such trip was with friends from Orange to last February's Wyong event, while in failing health.

Peter had a genius for designing and building extremely high quality audio amplifiers for music reproduction, using a 'minimum component count' philosophy. For performance, his amplifiers must rank among the world's best. Many are in regular use in homes of serious music-lovers around the district - fitting reminders of his wonderful skills in electronic circuit design and his neat methods of building equipment whose looks matched their performance.

Friends remember how Peter loved to tell a joke or three at barbecues or club meetings and it was well-known that if he didn't have something good to say about someone, he'd rather say nothing. Among all those to miss Peter's cheerful

presence, the amateur radio fraternities of Bathurst and Orange especially, know they have lost a dear friend, proficient experimenter and capable technical lecturer.

Peter's memory will linger 5 and 9 (loud and clear) in the minds of all his friends. He was simply that sort of person. Vale Peter VK2ALL, Silent Key.

Submitted by Peter Carter VK2ETK

The accompanying photograph of Peter VK2ALL in Wagga, 2005, was taken by Bruce Carroll VK2DEQ.

Noel Walker VK7WN

It is with deep regret that we announce the passing of North West Tasmania amateur, Noel Walker VK7WN. Noel passed away peacefully at home on Saturday 17th March following a short illness.

Noel's main interest in amateur radio was in the field of amateur television and he was very involved with the installation and maintenance of Tasmania's first amateur television repeater (Callsign at that time VK7RTV later changed to VK7RMD) on Mt. Duncan in the early to mid 1970's.

This repeater was one of the first solar powered repeaters to be installed in VK7 and as such brought with it many challenges, not the least being the carting by hand of VERY heavy lead acid batteries to the summit of the mountain. Noel was very active in this area and provided assistance where required. Many hours were spent designing, and trialling various antennae for use on the ATV repeater.

Noel's contributions to the hobby overall were successful on a lot of occasions and his friendly advice and attitude to all in and outside the hobby will be sadly missed.

Our condolences to Merle, Tania, Tracey and family from all Noel's amateur friends.

Vale Noel Walker VK7WN.

Submitted by Tony VK7AX

Over to You

160 metres antenna

I am planning to do some experiments with a rectangular loop of close to 500 feet (approximately 150 metres) on 160 metres. I would be interested to hear from any operator who has had experience with large loop antennas – especially on 160metres.

Scotty VK2KE QTHR.
Email: gsco8077@bigpond.net.au

VHF/UHF – an expanding world

David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

Barry VK3BJM at Redesdale Junction (near Kyneton) sent in a belated report on some good contacts he achieved in February:

Others will have noted the fine tropo conditions present on the morning of Saturday 3/2/07. I hadn't turned on any radios the night before, so I was unaware of how things had been building up. I got into the shack just after 2000 Z, and found that with the 144 MHz array pointed at Adelaide I was receiving VK7RAE at 539. With the array pointing at VK7, the beacon was 579. This is the strongest I've seen VK7RAE since moving inland (and the beacon being returned to service, of course).

VK7AC was on 144.1, and we worked each other at 59 at 2010 Z. 70 cm wasn't so strong; Norm was 51, while I received a very generous 55. Norm also had 23 cm, and I was very pleased at the signals there; Norm was 54, and he gave me a 57. This was a new grid locator for me - my first VK7 on 23 cm, too.

Also worked on 2 m were Paul VK7BBW (again 59 both ways) and Karl VK7HDX (56 - 57).

All very nice, considering that I'm now on the northern side of the Great Divide, and Mt Macedon threatens the view towards VK7. VK7AC is a bit over 500 km from my QTH (which is 5 km WNW of Kyneton).

JMFD

The recent John Moyle Field Day saw plenty of activity from field stations on the VHF/UHF bands. Andrew VK1DA operated portable near Canberra and reports:

A general thanks to all the operators with whom I made contacts over the weekend of the national field day contest.

The log has 115 contacts on VHF/UHF. About half of those are on 2 metres. Best DX was from Mt Ginini QF44JL to VK3LY/p QF03SV - according to GCGC this is 647 km. A good contact on 2 m and I was delighted to get through on 432 as well. Some other contacts were over 500 km, which is also gratifying (because you get more points for those contacts).

On a previous event I had big troubles erecting the mast with two large VHF antennas on it, so this time I decided to keep it simple and I took only a short 8-element antenna for 2 m and only a short mast (about 4 m). For 50 MHz, I had a half wave vertical (the type sold in DSE a few years back, purchased second hand, I suspect unused). On 432 it was a 22-el Yagi.

In the odd-contacts-made category, I include a contact with the Wagga boys on Mt Flakeney south of Wagga, on six metres, using my 40 m dipole fed through a RAK balun by 15 m of old RG58 coax. Their signal was stronger on this antenna than on my "real" 6 m antenna.

Power used on all bands was about 100 watts output. Cable runs on 144 and 432 were about 8 m of RG213 or RG214. Power supply was a 950 W GMC alternator that audibly sagged when transmitting on 432 through the TE systems amp, with the compression turned on.

The weather generally cooperated with a sunny, still afternoon on Saturday, and thick fog on Sunday until around 1:30 pm.

The signal from the VK3RGL 2 m beacon on Sunday morning was up to S5 on the 271 meter - this is a substantial signal. More operational beacons would provide extra assistance and indicate band conditions. Beacon operators - your beacons are missed.

New VK1 Records

Colin VK5DK writes that he, Russell VK3ZQB and Neil VK2EI have established some new VK1 distance records on 2.4 GHz, 5.7 GHz & 10 GHz.

On the morning of 27 March, Russell and I set up on Mt Canobolas near Orange and Neil on Mt Ginini near Canberra - a distance of 249.3 km.

The first contact was on 10.3681 GHz at 2234 UTC with 5/9 reports being exchanged both ways on SSB. Then an attempt was made on 24 GHz, but conditions had deteriorated on 10 GHz, meaning that the possibility of a success on 24 GHz was remote. When moving the 24 GHz equipment, a malfunction occurred causing a relay to fail, which resulted in a blown receive mixer on my 24 GHz unit. So, any hopes of a contact between Neil and ourselves on that band were dashed.

Colin VK5DK and Russell VK3ZQB

We then set up our 5.760 GHz unit and successfully had a contact on SSB. We were running 15 watts to a 600 mm prime-focus dish using a can feed. Neil was only running 100 mW to a 600 mm dish, but signals were very strong even with such low power. Neil's report to us was 5/8 and our report to Neil was 5/9.

2.4031 GHz was then set up and a 5/9 SSB contact was made both ways. I was running approx 5 watts to a 25-element Yagi and Neil was running 1.5 watts.

23 cm in "G" Land

Doug VK4OE has recently been operating portable in the UK on 23 cm. After an initial hiccup when a wire became detached in a connector, requiring a visit to a friendly local, Doug set up on a local hilltop to see who he could work.

It was a beautiful morning, ending several days of cold wind, and I had a heap of fun, working six stations on 1296.2 MHz in about forty minutes operating on a weekday morning. I must admit that posting to the ukmicrowaves e-mail list did help!

Calls worked were GW8AWM (he was using a 2 m beam for a 23 cm antenna), G0UPU, G4DDK, G3VKV, G4BEL and M0ELS. Signals across the country were good for distances of around 300 km but I'm sure that the altitude of Blorenge was to my advantage. There was a well-defined temperature inversion visible at about the same altitude as I was (smog coloured - urk!) and I was wondering if I might even have been too high for propagation further than line-of-sight. The results demonstrate that it wasn't. 23 cm is a great band, isn't it?!

Beacons

Several months ago, it was reported that Alan VK3XPD had established a new beacon – VK3RXX – on 2.4 GHz in the Melbourne area. Alan now reports that it has been heard from afar: ·

With today's somewhat unexpected lift in propagation, the VK3RXX Melbourne Beacon on 2403.530 MHz has been heard by Colin VK5DK in Mt Gambier – a distance of 380 km.

Colin reports: *11 April at 2300 UTC, signal 5x5, clean signal initially then it went raspy, estimated to be 1 kHz low.*

Colin's station is a VK5EME Transverter with a 25-Element Yagi.

I'm probably just as pleased as he obviously was about this event! Oh, and I now owe Colin the "promissory" bribe of 5 low-noise HEMPT FET's.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur – VK7MO

For a change, this month's report covers the optical application of WSJT.

On 9 April 2007, Justin VK7TW, and Rex VK7MO extended the 474 THz national digital record to 51.3 km using WSJT and the JT65a mode with 3 watt input red Light Emitting Diodes (LEDs) and large 400 x 400 mm narrow beamwidth (approx 0.5 degree) Fresnel lenses.

These lenses produce around 50 dB gain. While the signal levels one way were only around -20 dB, due to a transmitter problem, they were saturation in the other direction indicating there is plenty of system performance to spare.

Justin and Rex have also been experimenting with optical cloud-bounce. Because of the difficulty of aligning two narrow beams on a non-descript moving cloud, it is necessary to use a relatively wide beamwidth of around 10 degrees and use higher power to compensate for the wider beamwidth.

They first tried a 250 watt projection lamp which was mechanically chopped by an 8 hole aluminium disc, driven by a synchronous motor, to produce an audio tone. The intention was to use this system to transmit slow speed VFSKCW.

This system produced signals up to 35 dB above the noise in 0.1 Hz bandwidth. While this system demonstrated that cloud-bounce is possible, it was found that the slip on a synchronous motor is too great to achieve adequate frequency stability and thus they moved to an 18 x 1 watt Luxeon Flood LED unit through a Fresnel lens.

While this overcame the problem of frequency stability, and allowed the detection of tones in 0.05 Hz bandwidth, the signal levels were too low to allow the exchange of information with WSJT.

A problem with this approach is that it produces 18 narrow beamwidth spots over a beamwidth of 10 degrees rather than a uniform radiation pattern. It was thought that the process of scattering from the clouds would fill in the gaps and produce a uniform radiation pattern at the receiver.

However, this seems not to be the case as later tests with a single LED with high gain Fresnel lenses for both TX and RX showed the beamwidth, even after scattering from clouds, was maintained at the same order of the beamwidth of the lenses; with perhaps an increase of only a factor of two.

In order to produce a uniform radiation pattern with relatively high power, a 30 x 3 watt input LED array was constructed with the individual LEDs working through small plastic lenses of the type used for LED torches (Jaycar Part No HP-1290).

Each torch-type lens should produce a beamwidth of around 10 degrees so that the total adds together to maintain a reasonably uniform radiation pattern. While it was found that the array produced a reasonably uniform radiation pattern, the beamwidth was not symmetrical and was spread over an oval of 10 x 20 degrees.

It was found that the reason for the non-symmetrical beamwidth is that cheaper 3 watt Star LEDs (Jaycar Part No ZD-0520) achieve the 3 watt power level with two separate chips which produce two spots when used with a lens. Thus the more expensive single chip Luxeon Star LEDs (Jaycar Part No ZD-0432) would have achieved a tighter beam and a 3 dB improvement.

Still the cheaper units produced good results over a short non-line of sight path of 1.2 km, with clouds at around 1200 meters altitude. On the first attempt the clouds were rather patchy resulting in rapid QSB with signals varying from undetectable to -5 dB on the WSJT scale.

A second attempt with more extensive cloud cover produced continuous signals and perfect decodes although the peak

signal level was still no more than the -5 dB achieved earlier. For this second test, the number of LEDs was reduced to see how far down it was possible to go and still decode JT65a signals.

It was found that occasional copy could be achieved with just two LEDs. After careful alignment with six LEDs, 50% copy was achieved with a single LED at signal levels around -28 dB.

Following the above results, Rex and Justin did a check with a carefully aligned single LED focussed with a 400 x 400 mm Fresnel lens and measured signal levels at around -16 dB.

However, it was only possible to align this system after the signal had been found on the broader beamwidth 30 x 3 watt array which means it is not that practical for cloud-bounce. In summary the results in terms of signal levels were as follows:

30 x 3 watt "cheap" LED array with 10 x 20 degree beamwidth: - 5 dB

1x 3 watt Luxeon with 400 x 400 mm Fresnel lens around 0.5 deg beamwidth: -16 dB

1 x 3 watt "cheap" LED through torch type lens beamwidth 10 x 20 deg: -28 dB

Options to improve performance appear to be narrower 5 degree beamwidth torch lenses (available from the USA) and use Luxeons in the array, which should provide a 6 to 9 dB improvement in performance. It is expected that a 6 LED array of Luxeons with 5 degree beamwidth would provide a very effective transmitter at the expense of a small increase in the difficulty of alignment.

The present 30 x 3 watt LED array is pulse modulated with square waves using MOSFET switches. Little is to be gained by going to linear modulation and sine waves as the LEDs would then have to be restricted to a narrow pseudo-linear range with a significant reduction in effective power.

A French amateur advises that it should be practical to work cloud-bounce over longer paths with the array transmitter that Justin and Rex are using, as scattering efficiency from clouds increases with distance and this tends to compensate for the increased attenuation over longer paths. Thus plans are underway to explore optical cloud bounce over longer distances.

While the feasibility of optical cloud-bounce has been demonstrated, at this stage only one of the new LED array transmitters has been constructed and thus a two way contact is still to be achieved.

For more information on Optical activity in Australia, join the Optical DX group at http://groups.yahoo.com/group/Optical_DX/

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

The Magic Band – 6 m DX

Brian Cleland – VK5BC

After a very good summer sporadic E season, the band was very quiet during March. I have not received any reports of contacts being made with only the odd report of a beacon or TV signal being heard. There have been a few openings from northern Queensland to JA.

I received a note from Kevin VK4BKP in Mackay who reports the following:

I've only been active on 6 m for a few months after a 20 year break. I'm using a rotatable horizontal dipole at 30 feet, IC-706 and 100 watts. I haven't worked any JA pileups - just one or so each opening. From my log:

March 06 2007 0620 UT worked JR6EXN Hide 59/59 50.140 (100 watts dipole).

March 06 2007 0640 UT partially worked JH4BTI 5x7 50.150.

March 13 2007 0500 UT JG3LEB Hiro (often on the logger) 57/55 50.110.

March 14 2007 0510 UT JH7XRZ Norifumi Takahashi 58/59 50.110.

March 14 2007 JA2IGY (Beacon) 50.010.

March 14 2007 JA6YBR (Beacon) 50.017.

March 14 2007 JA1ZYK (Beacon) 50.023.

March 28 2007 0505 UT JR0ETA 57/57 50.110.

I have also heard some JAs working other VK4s etc.

I've heard 49.750 just about every second day but have noticed it has to be S9+ to work into Japan.

From the 6 m loggers, on the 29th March, Ray VK4BLK at Yeppoon worked several JAs including JL8GFB, JF2LFG & JR2HCB. On the same day, Kevin VK4BKP at Mackay also worked JA7WSZ and JA7WSW reported hearing VK8RAS, VK4RTL and FK8SIX beacons.

In some late news, the band has opened between VK6 and VK5 late in the afternoon on the 9th, 10th and 11th April. On the 9th, Peter VK6KXW reported hearing the VK5VF and VK5RBV beacons and worked Brian VK5BC. Peter has now moved to the country 120 km east of Perth (grid OF87jr). On the 10th and 11th Geoff VK6HOG reported hearing both the VK5 beacons as well as the VK6RSX Dampier beacon very strongly but unfortunately no contacts were made.

Please remember to send any 6 m information to Brian VK5BC at bcleland@picknowl.com.au.

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Early Notice Hamfests

Cranbourne
22 July

Perth
6th August

Shepparton
10th September

Ballarat
5th November

Club Secretaries: Please advise us of your Hamfest schedule well in advance and we willinclude it in the magazine.

g.nieman@bigpond.com

The art of QSLing

Eddie DeYoung VK4AN
Volunteer Facilitator
VK4-Inwards QSL-Bureau

QSLing can be an expensive activity, but it doesn't need to be if you follow all or some of the following tips and strategies:

Sponsor

Contact your local tourist bureau and explain to them what a QSL card is. Indicate that you post them all over Australia and the world to other amateurs that you talk to. Ask them about footing the bill for the printing of a few hundred QSLs, promoting the reason for more people to visit your region. Another possible source of sponsorship is a local business that distributes their product(s) nationally/internationally.

Printing

If there are no cooperative sponsors, or you prefer to pay for them yourself, then you should seriously consider ordering them from one of a number of specialist QSL card printers that will supply cards to you at a price that is usually much cheaper than your local printer can. Remember the standard size for QSL cards handled by the Bureaux is 9 x 14 cm.

International posting

For those 'rare' or important overseas QSL requests, it is always best to send your card to them directly. Instead of paying 'top dollar' for regular international airmail, print "CARD ONLY" on the envelope, and pay a worldwide flat-rate of $1.25 per envelope.

You can include the QSL and an IRC in the envelope, but do not put a return-envelope inside. To 'compensate' the recipient for not sending an envelope, you might want to include some cancelled Aussie stamps and make a note on your QSL card why you included the stamps. Most recipients will accept your 'gift' as compensation for the cost of an envelope. Strictly speaking, you are only supposed to have one card only in an envelope that is marked CARD ONLY. But, hey, how much does an IRC and a few cancelled stamps add to the weight!

IRCs vs Green Stamps

Many stations indicate that they prefer '2 x green-stamps' with your card to get a direct reply (as they make a small profit on every card!). For those of you new to QSLing, a 'green-stamp' is a $US1.00 note. It is cheaper to send 1x IRC rather than 2 x $US1.00, unless you have a good source of cheap $US1.00 notes!

A number of Australian and overseas QSL Managers will on-sell IRCs to you at prices cheaper than Australia Post. This usually works out the cheapest way of getting them, even though you will be paying for the postage to get them to you. By purchasing 20 to 50 at a time, the postage cost would be a small percentage.

Posting cards to a VK bureau

The most cost-effective way of sending cards to a VK-Outwards QSL bureau is to use prepaid C5 envelopes which cost $1.20 each and you can stuff up to 500-grams of cards into them (as long as the thickness is 20 mm or less)! I use them regularly, and can easily get 400-grams of cards in two side-by-side piles into one C5-envelope without going over the 20 mm thickness.

A set of callipers will be handy to check that you haven't exceeded the 20 mm thickness. For a cheap source of a pair of plastic callipers, try your local "$2 shop" (mine cost $2.49 at "Flash Harry's").

Posting cards to overseas bureaux

By posting cards direct to overseas QSL bureaus, you will save several months of processing time. Posting them to your state/territory Outward QSL bureau is cheaper, but adds approximately one to four months delay in them getting to their destination. This is due to the normal processing time by State/territory Outward QSL bureaus that usually sort and on-forward them to the National Outward QSL bureau, where they are consolidated and posted overseas when there are enough cards to be economical.

If you are a financial WIA member, the use of the VK QSL bureaus is free, so your only cost is the postage/envelope to get them there. If these delivery delays are acceptable, then just post them to the VK bureaus; but, if you want to speed up the process, then you should post them to the overseas bureaux yourself.

The cheapest way to post QSLs to overseas bureaux is via Sea Mail. Delivery delays can range from several weeks to several months. In most cases, this is acceptable.

To get them to the bureaux faster; you will have to spend additional funds for air posting. Sometimes this is a good idea, as it results in replies that much quicker. If you are chasing awards, this may be a worthwhile expense, and still cheaper than individual postings. If you chose this faster method, the most economical way is to purchase DL and C5 prepaid international air-post envelopes. You can send up to 50 grams of cards in a DL envelope for $2.20 and 125 grams in a C5 envelope for $4.50. Typical weight of a QSL card is 3.5 to 3.8 grams, plus 5 grams for the envelope. This means you can post around 12 cards in a DL prepaid envelope and 30 cards in a C5 prepaid envelope.

For the cheapskate

The cheapest way of confirming received QSLs is to just stamp or write on the card, "QSO(s) ARE CONFIRMED", sign or initial the card, and return it to the sender via the bureau system! That way you do not even have to have cards printed! This method is valid for most awards in most countries (the ARRL accepts these cards). Your only cost is to get them to the outward bureau. A 'bonus' for doing this is that you do not

end up with hundreds of unwanted QSLs to dispose of, although the recipient will probably think of you as a real 'cheapskate!'

Inwards or Outwards bureaux?

Some members have been posting OUTWARD cards to the INWARDS bureau managers. This is a waste of resources and time, as the parcel/envelopes must be redirected.

To clarify: the OUTWARD bureaux process cards sent TO them by members to local and overseas bureaus; and the INWARD bureaus process cards FROM stations TO members (and in some cases, non-members).

VK Outward QSL bureaux

I have been personally informed that the WIA National Outward QSL bureau will only process QSL cards for WIA members. Non-members must use an alternative.

VK Inward QSL bureaus

Each state/territory INWARD QSL bureau has a slightly different method of processing cards. Contact your local Bureau for details.

Member obligation

Keep the Inward bureau updated on any changes to your posting instructions or WIA membership status. If you do NOT want to receive cards from the bureau, then let them know so any cards received for you can be immediately put in a box for the WIA QSL Curator instead of taking up filing space for several years.

If you change your callsign, or move to another call-area or overseas, please let the Inward bureau know so that a note can be placed on your file. Cards will be forwarded free to any Australian address, but, if moving overseas, you will need to open a postage account if you want cards forwarded.

Club obligation

All affiliated clubs should keep the bureau up-to-date as to their members who want cards sent via the club. Make it a part of your secretary's regular duties.

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What would you have said?

Jinkin (Jay) Frame

An interesting and different sort of meeting at the club tonight. Four of our members 'volunteered' to be the experts (well, not exactly volunteered!), with the members asking questions. I don't think that the experts were stumped for an answer but there were some good points made. Maybe it is something that your club could try if you're stuck for a speaker one night. The questions ranged from 'what is SWR and is it really important to get it down to 1 to 1? 'How do you easily measure the sensitivity of a receiver? Another interesting one was 'how does a Yagi work?' but the question that caused the most discussion was 'what is DX?'

It became clear that it was virtually impossible to define, for it means totally different things to different people. The dedicated QRP'er running no more than 5 watts into a very basic antenna considered anything over 3000 miles away that he could contact as REAL DX. Someone whose speciality is Moon bounce considered a 'QSO' as DX. Could we assume a DX'er (and that raised another discussion that we terminated!) as someone working the HF bands that contacts a rare station in the antipodes over a Polar Path?

So did we come to any conclusions? Well Yes, but not unanimous by any means!! Dx is what is perceived by each individual to be DX and the term DX'er must be created by each individual who considers himself a DX'er and defend it to any person querying it.

So –What would you have said?

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Barcfest 2007

Saturday May 12 1000 hrs

Mt Gravatt Showgrounds (QLD)

www.qsl.net/vk4ba select Barcfest

or ring 3343 7247 for all information

SOUTH EAST RADIO GROUP

Radio Convention

June 9th and 10th

Margaret Street Scout Hall

Mount Gambier

Doors open 12 noon Saturday.

Information — Wayne Kilpatrick

0407718908 or email serg@internode.on.net

MRDC

HAMFEST 2007

1000 12 May

Brentwood College

Watsons Road Glen Waverley

Info and booking

9705 1051

9702 1199

www.mdrc.org.au

Club Secretaries: Please advise us of your Hamfest or special event schedule well in advance and we will include it in the magazine.

g.nieman@bigpond.com

Hamads *classifieds* FREE

FOR SALE NSW

Brand new 70 cm band FM hand held TS-5118, S/N 80917430. (Includes wall battery charger). Asking $65, the price includes free delivery to anywhere in Australia.

Brand new 2 m band FM hand held TS-5118, S/N 80917430. (Includes wall battery charger). 1 year manufacturer's warranty. Asking $65, the price includes free delivery to anywhere in Australia. Tomas VK2CCC 0435 079 740, tomas.magyla@gmail.com

For sale or exchange for ham communication equipment. Two Williamson main amplifiers. Redline output transformers Ferguson power transformers KT66 output share 3 x KT66, 2 x 6SN7, 1 x SV4G Ken VK2ZAN (02) 6331 3335.

FOR SALE (FREE) VIC

Six AWA and Philips 12 V carphones, complete except for crystals. Suitable for conversion to 2 m or 6 m bands. One free to each person to collect. Bill VK3ZWO (03) 9598 6304

WANTED VIC

I am trying to restore/complete my AN/TRC24 Radio system and I am looking for the following parts/units: transmitter T-302/TRC, power supply PP-685/TRC, receiver R-417/TRC, A Band plug-in AM-1180/GR, amplifier/converter AM-2537/TRA-25, amplifier/converter AM-3204/TRC-24, oscillator/multiplier 0-903A/TRC-24, transformer TF-167/TRC, and any other bits and pieces for this radio. Thanks for reading this. John Eggington VK3EGG, johne@telpacific.com.au Mobile: 0409 234 672

WWII Murphy B40 Communications receiver working or not, and in reasonable condition.Barry VK3AK QTHR 03 9363 5628 or barryjw@optusnet.com.au

Tone genererator for Yaesu FT-290R11, type FTS-7 phone Brewster VK3YBW 03 9527 2661 QTHR after 6pm

FOR SALE QLD

Data sheets and sockets 4 x 828, 1 x 7094, 1 x 4CX1500, Best offers Paul VK4DJ 07 4775 7998.

A COM-AN-TENA tri band llb 35 c 10/15/20 m antenna 5 years old, it is fully dismantled and stored under cover with assembly instructions and photos, pick up or will ship at cost, as is $300 contact VK4QO any time on 07 4939 1812

FOR SALE SA

Improve your HF antennas; VK5JST Antenna Analyser kits [see AR article May 2006] are available. For more details see www.scarc.org.au; contact SCARC PO Box 333 Morphett Vale SA 5162, or email: kits@scarc.org.au

WANTED SA

Good power transformer to suit FTDX- 400 HF Trcvr. or information where to have mine rewound. Adrian VK5AJR QTHR phone 08 8587 6242 email: reimbaj@riverland.net.au

Are you managing the estate of a 'Silent key'?

Please save any QSLs for the National QSL collection, but first contact:

The Hon. Curator,
Ken Matchett VK3TL
on (03) 9728 5350
or email: jeandawson@iinet.net.au

Rare DX, special call-signs prefixes and suffixes, pictorials and pre-war QSLs are needed.

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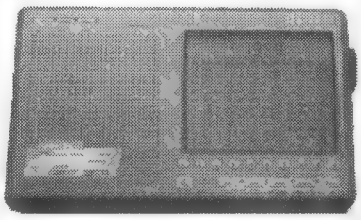

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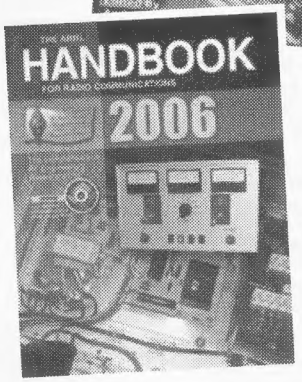

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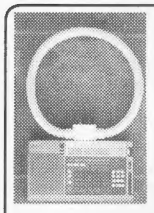

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The WIA offers one year and 5 year membership for all categories except Concession Student. The fees for each category are Full members $75 ($365), Overseas members $85 ($403), Concession members (pensioner) $70 ($332), Concession members (student) $70, Full members no magazine $50 ($237), Family members $40 ($190)

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VK2 New South Wales VK2QV Chris Flak VK2XCD Chris Devery VK2BFN Adrian Clout	Phone 02 9689 2417 vk2wi@ozemail.com.au vk2advisory@wia.org.au	VK2WI - Sunday 1000 and 1930 hours local.1.845; 3.595; 7.146; 10.125; 14.170; 28.320, 52.525; 145.600; 147.000; 438.525; 1273.500 megahertz. Plus regional relays. VK1WIA news included in the morning
VK3 Victoria VK3JJB John Brown VK3PC Jim Linton VK3APO Peter Mill	Phone 03 9885 9261 arv@amateurradio.com.au	VK1WIA, Sunday 11am and 8pm, 3.615 and 7.085 (LSB), 10.130 (USB), VK3RML 146.700, VK3RMM 147.250, VK3RMU 438.075.
VK4 Queensland VK4BY Don Wilchefski VK4ZZ Gavin Reibelt VK4KF Ken Fuller	vk4advisory@wia.org.au	VK1WIA, Sunday 9.0am via HF and major VHF/UHF rptrs
VK5 South Australia and Northern Territory VK5OV David Box VK5APR Peter Reichelt VK5ATQ Trevor Quick	Phone 08 8294 2992 boxesdnm@lm.net.au peter.reichelt@bigpond.com vk5advisory@wia.org.au	**VK5 South Australia** VK5WI: 0900 am local time. 1.843 LSB, 3.550 LSB, 7.140 LSB, 28.470 USB, 53.1 AM, 147.000 FM Adelaide, 146.900 FM South East, 146.925 FM Central North, 439.975 FM Adelaide North. **VK8 Northern Territory** 0900 local time 3.555 LSB, 7.050 LSB, 10.130 USB, 146.900 FM.
VK6 Western Australia VK6NE Neil Penfold VK6XV Roy Watkins VK6OO Bruce Hedland-Thomas	Phone 08 9351 8873 http://www.vk6.net/ vk6advisory@wia.org.au vk6ne@upnaway.com vk6xv@bigpond.net.au	VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Realaudio" format from the VK6 WIA website
VK7 Tasmania VK7ZAX Phil Corby VK7DG Dale Barnes VK7KK Reg Emmett	Phone 03 6234 3553 vk7advisory@wia.org.au phil.corby@tassie.net.au vk7dg@wia.org.au regemm@ozemail.com.au	VK1WIA Sunday 9am on VK7WI network: 3.570MHz LSB, 146.700 MHz FM (VK7RHT South), 53.825MHZ FM (VK7RAD South), 147.000MHz FM (VK7RAA North), 146.750 FM & 53.825MHz (VK7RNW North West), 146.625 MHz FM (VK7RMD North West), UHF CB Channel 15 (Hobart) and 27MHz CB - 27.225MHz LSB (Hobart). Followed at 9:30am with VK7 Regional News Broadcast also on 7.090MHz LSB & 14.130MHz USB

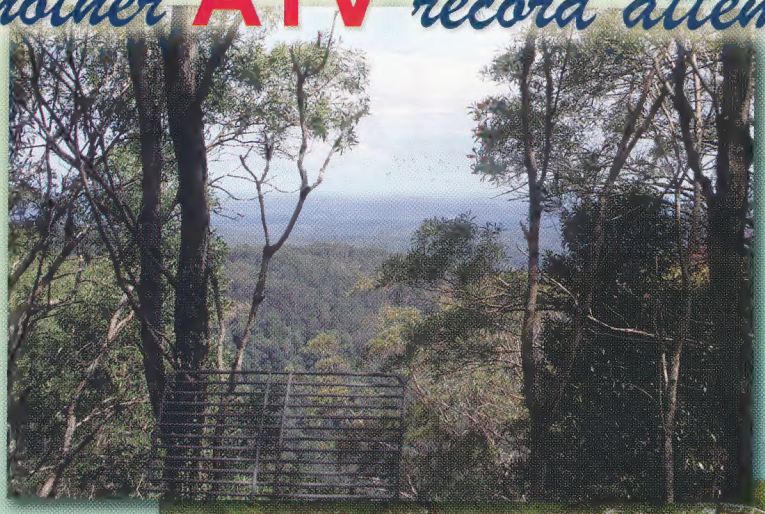
Notes

1. Only three members of the state advisory committees are listed.
2. All listings are preliminary. They will be updated each month as required.
3. Membership application forms are available from the WIA web site www.wia.org.au or the national office address above.

What, yet another ATV record attempt?

Dan VK2GG and Jack VK2TRF

What, yet another ATV record attempt? Ho hum! But wait a minute, what about an Australian ATV record using stock standard A/V sender/ receivers sold by Jaycar, utilizing 15 mW over 175 km? This is really a story about how you, the amateur, can get on 5.7 GHz ATV with minimal equipment. Thanks to the Hornsby and District ARC (HADARC) for sharing the top of Mt Warrawalong (Watagan Forest) with us during the John Moyle Field Day contest.



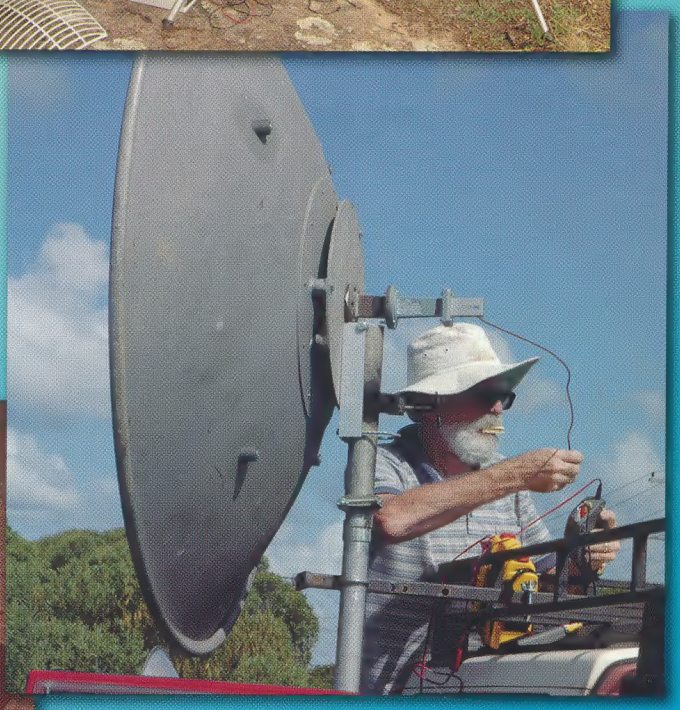
Left: The view from Mount Warrawalang

Below: The VK2TRF 'Golden" dish

Dan VK2GG and Graham VK2DWL found a spot looking south through some trees. Jack VK2TRF travelled to Mt Gibraltar, 175 km away. Mt Gibraltar is a very busy site, with all kinds of nasty RF installations which could hamper our record attempt, or swamp the puny 15 mW from the transmitter. But Mt Warrawalong is a Forestry Fire tower site, with mainly forestry UHF Yagis on it. It has a steep entry track, and a locked gate. As the HADARC had already made the necessary application on the variety of forms, safety requirements, etc, all we had to do was to approach HADARC with our request to share.

Read the full details of our attempt on page 5.

Below: The home brew horn antennas



Above: The VK2GG 1.2 m dish

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